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THE AGRICULTURAL HIGH SCHOOL IN ONTARIO

BY

GEORGE McMILLAN

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THE AGRICULTURAL HIGH SCHOOL IN ONTARIO

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PREFACE

ONTARIO occupies a unique position. Geographically it extends almost to the heart of the North American Continent. Socially it is highly insulated. It merges into a wilderness to the north. The more densely populated part is separated from the western prairie by a thousand miles of rocky waste. Quebec, with its French language, lies between it and the English-speaking people to the east, while the great lakes constitute a far more formidable barrier than one is wont to believe against social and educational contacts with the republic to the south.

The people of Ontario, about 3,000,000 souls, have combined in them the elements of conservatism and progressiveness in a peculiar degree. Nowhere, perhaps, does this characteristic reveal itself more prominently than in the management of educational affairs. The educational system of the province is the product of ideas gleaned from many lands, mingled with rich contributions of those who founded it and moulded it to satisfy the needs of the people through succeeding generations. Partial isolation has probably been responsible for the type of organization met with in Ontario. To a great extent the system has developed those who, in turn, have developed it. Its many excellencies are prized. It must be open, however, at all times to critical examination in the light of the varied experiences both of those who dwell within, and of those beyond, the confines of the province. It is recognized in educational, as in plant and animal, improvement that while inbreeding fixes the type it may exclude those elements without which the most desirable type cannot be produced. Such outside contacts may be secured either by importing men and women to fill positions or by assisting financially employees within the province to carry on researches abroad as well as at home. Both of these procedures have been resorted to in Ontario.

While considerable data in the following pages have been obtained in Canada, and more especially in Ontario, our experience with the agricultural high school is too limited to guide us with safety to general conclusions. Much data, therefore, have been secured from publications in other lands, from correspondence and

personal interviews with teachers, supervisors and state directors of vocational agricultural education in the United States, from lectures by professors and others in the Rural Education Department, New York State College of Agriculture, Cornell University, and from personal visits to schools of agriculture, to high school departments of vocational agriculture and to home projects of boys and girls on farms in the North-Eastern States.

Acknowledgements are due to the Agricultural Representatives, Normal School Masters and Secondary School Teachers, more particularly to Teachers of Agriculture, in Ontario, and to the Principals of Agricultural Schools in Alberta, through whose services questionnaires were submitted to pupils and helpful data supplied; to President J. B. Reynolds, Professor A. Leitch and other members of the Staff of the Ontario Agricultural College, for suggestions and for material relating to agriculture; to Mr. J. Bell, Principal of the School of Agriculture at Kemptville, who supplied information regarding the students in attendance at that school; to Dr. A. H. U. Colquhoun, Deputy Minister of Education and Mr. W. B. Roadhouse, Deputy Minister of Agriculture, Ontario, and to Mr. H. A. Craig, Deputy Minister of Agriculture, Alberta, through whose offices educational statistics were made available; to Dr. Peter Sandiford of the Ontario College of Education, Toronto, for constructive criticisms during the preparation of this work; to Professor G. A. Works, Dr. T. H. Eaton, Dr. J. E. Butterworth and other members of the Faculty of the Department of Rural Education in the New York State College of Agriculture, Ithaca, for enlightenment re the organization, administration, teaching and financing of vocational agriculture in the secondary schools of the United States; to Dr. A. K. Getman, Albany, N.Y., Dr. R. W. Stimson, Boston, Mass.; Dr. G. W. Gehrand, Madison, Wis., and other State Supervisors of Vocational Agricultural Education for their ready co-operation in supplying data relative to the progress of agricultural education in their several states; to Mr. F. B. Atkinson, a student in the Hamilton technical school, for assistance in preparing diagrams; and to all others who contributed toward the development of the following pages.

G. McMILLAN.

Normal School,
Hamilton, Ontario, April, 1924.

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CHAPTER I.

INTRODUCTION.

ONTARIO is endowed with a goodly heritage. In 1922 her assessed area, as shown in diagram I, was slightly less than 10.8 per cent of the land area of the province. At the same time only 6.4 per cent of the land area was cleared. 4.4 per cent produced cereals, grasses, legumes, corn, flax, potatoes and root crops.[1]

According to diagram II, the rural population of Ontario in 1921 was 41.82 per cent of the total population of the province. The urban population includes all who dwell in cities, towns and incorporated villages. Since a village may become incorporated when

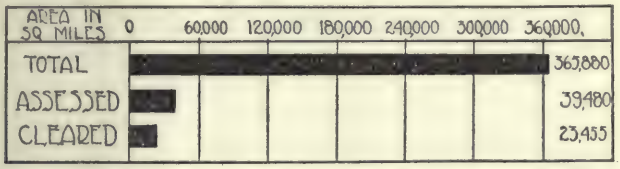

Diagram I, showing land area of Ontario, and areas assessed and cleared. (Data from the Canada Year Book, 1921, page 95; and the Ontario Department of Agriculture, Crop Report, No. 153, Dec. 1922, page 30.)

it numbers 750 inhabitants on an area not greater than 500 acres, the rural population of Ontario must include relatively few whose interests are related only remotely to farming. True there are other industries such as lumbering, mining, fishing and hunting. Figures are not available for the population engaged in each industry; yet we can safely affirm that the overwhelming majority of the rural population are devoted to agriculture.

The farming population is located very largely on the St. Lawrence Lowlands of Eastern and Western Ontario. Rapid expansion is taking place in the Clay Belt to the north. Elsewhere farming is confined largely to the small valleys adjacent to towns and villages.

[1]See Ontario Department of Agriculture, Crop Report, No. 153.

The gross agricultural wealth and the agricultural production are represented in diagrams III and IV respectively. Since field crops were consumed in the production of dairy and poultry products, farm animals, etc., the above total is considerably above the actual agricultural revenue.[1]

Farming in Ontario employs and supports approximately a million and a quarter people, involves a capital investment upwards of one and a half billion dollars and produces annually products to the value of three or four hundred millions of dollars. Upon the success of this rural population depends very largely the prosperity of those who dwell in our cities. It is incumbent, therefore, upon

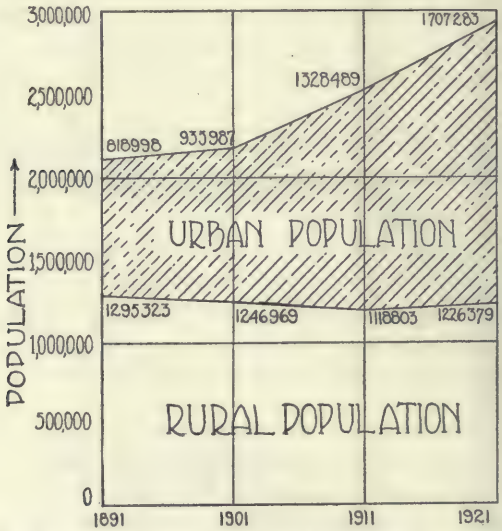

Diagram II, showing increase in rural and urban population of Canada. (Data from Canada Year Book, 1921.)

those in authority to provide such educational facilities as will promote a maximum of efficiency on the part of all engaged in so great an industry.

There are those who contend on theoretical grounds that agriculture in the future will be conducted on immense farms, each operated from one centre and under the management of an agricultural expert who will employ gangs of less skilled workers. Under

[1]See Canada Year Book, 1921, page 281.

such conditions agricultural schools for the masses would not be so essential as at present. Investigations in New York State by Professor Warren, however, show that as mixed farming develops it becomes unprofitable to operate more than from 300 to 600 acres from one centre.[1] Still more applicable to the case are the findings of Professor A. Leitch of the Ontario Agricultural College in his farm surveys in Ontario. Six of these have been published in bulletin form.[2] In these reports he shows, by analysis of data, that "the size of the farm is one of the important factors having influence on the profits of any type of farming". In three of these he states that "as the size of the farm increases so also does the labor income". He shows, however, that on certain so called "odd-

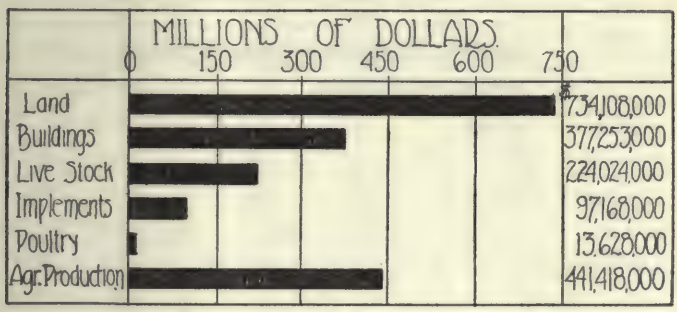

Diagram III, showing the estimated gross agricultural wealth of Ontario, 1921. (Data from the Canada Year Book, 1921, page 283.)

sized" farms greater managerial skill is required than on even smaller farms. In these reports we find such statements as "Size of farm is not absolutely essential to the making of a high labor income". He then shows that in several of the more common types of farming met with in Ontario, farms varying in size from 100 to 200 acres "offer all the opportunity needed for large profits". Elsewhere he states that "there appears to be no possibility of more than a very few individuals attaining the necessary skill to direct profitably the operations on very large farms."[3]

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[1]Warren, G. F., Farm Management, Chapter 7.

[2]See Ontario Department of Agriculture, Bulletins, Nos. 275, 278, 282, 286.

[3]In answer to inquiry.

Even on the large estates farmed from one centre there would appear to be little place for the expert manager who does no manual labour. His data justify Professor Leitch in his statement that "farming does pay a premium for hard work and economy." The manager must work with his men. Unlike manufacturing, agriculture holds little prospect of great centralization in the hands of magnates.

There is no immediate prospect of a radical change in the type of farming to be carried on in Ontario. Is there evidence of need for improvement in methods now followed? We cannot do better than return again to the findings of Professor Leitch. The follow-

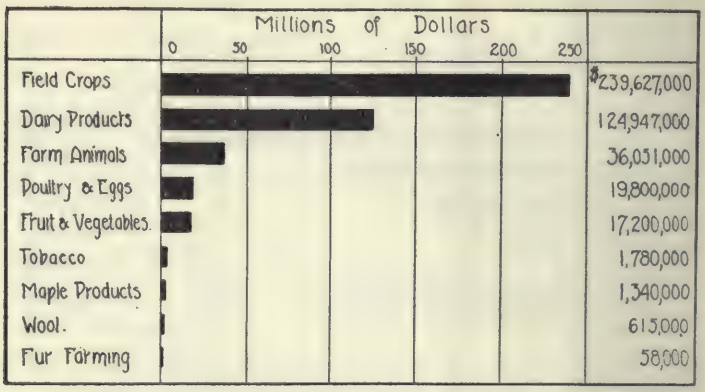

Diagram IV, showing the estimated gross agricultural products of Ontario, 1921. (Data from Canada Year Book, 1921, page 281.)

ing statements are taken from his reports: "Certain farmers are working to better advantage than their neighbors despite the handicap of small acreage." "It can be stated with certainty that the man who is farthest on the road to success is the man who studies the latest scientific data on cultivation of soils, drainage, fertilizers, weeds and plant diseases and who makes the most practical application of the knowledge so gained to the conditions peculiar to his own farm." In dairy farming "quality of live stock is a more potent factor in determining farm profit than is yield per acre of farm crops." Method is of more importance than is size of farm. Let us remember that these are not mere opinions but conclusions drawn from a careful study of data obtained through detailed

records of farm operations throughout one year on all the farms within certain typical districts of the province.

Two factors stand out prominently in these conclusions; first, the need of adequate scientific knowledge on the part of the farmer; second, willingness and skills on his part to apply this knowledge in his every day farm practices.

What provision is made for gathering adequate scientific information relating to agriculture? The Federal Government of Canada has under its control five experimental farms, nineteen experimental stations and eight sub-stations. "The Central Farm at Ottawa is the headquarters of the system".[1] A Director has control and general supervision of the whole system. Chief technical officers have control of the following special lines of work at both the Central and Branch Farms, Animal Husbandry, Bees, Botany, Cereals, Chemistry, Extension and Publicity, Economic Fibre Production, Field Husbandry, Forage Plants, Horticulture, Illustration Stations, Poultry and Tobacco.

The Ontario Department of Agriculture in 1874 established the Ontario Agricultural College and Experimental Farm at Guelph. Since then four other provincial experimental and demonstration farms have been established. From these experiment stations and from the many other experiment stations in Canada, the United States and elsewhere, has come a wealth of scientific information regarding the best practices in agriculture.

Let us consider what agencies exist for putting across this wealth of material to the producer, and how effectively the task is being performed. On the farms of Ontario we find a large population of industrious, faithful workers of economical habits and progressive ideals who find little opportunity for contact with this great mass of scientific data. Through the nature of their work and in many cases through economic necessity they are unable to attend schools or colleges of agriculture. In very many instances they do not see the need of such training as these institutions offer. To aid these people governments issue bulletins, provide lecturers and consulting specialists in various fields, conduct demonstrations and drainage surveys, promote fall and winter fairs, field crop compe-

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[1]Canada Year Book, 1921, page 302.

titions and maintain Agricultural Representatives in the counties and districts to aid those who seek assistance.[1]

The great problem facing educational authorities is that of providing adequate vocational training and instruction for the perpetual tide of rising youth who are destined to farm. Since the days of Egerton Ryerson, efforts have been made to have agriculture taught in the elementary schools. To-day the Education Department is stimulating this work by a system of liberal grants to both teachers and schools. The importance of this movement may be judged by a perusal of the report of the Inspector of Elementary Agricultural Classes.[2]

Realizing the impossibility of meeting the need through the elementary schools alone, efforts have been made to have agriculture taught in the secondary schools. This work began with the appointment in 1907 of six District Representatives. "The object in view was to impart agricultural instruction in the High Schools that the rising generation might be trained for farm work, and at the same time to bring the most up-to-date agricultural information to the very doors of the farmers who had not had an opportunity of acquiring it in their youth."[3] Six high schools were selected for the work: "Each teacher was a graduate of the Ontario Agricultural College." His salary was paid by the Education Department and his expenses by the Department of Agriculture. "Hence in addition to being appointed a teacher on the High School Staff . . . . he was appointed officially as a representative" of the Department of Agriculture for the district. "An office was opened in the town and equipped with agricultural publications and other requisites". "It was designed that it should be . . . . . the centre from which should radiate all the organized agricultural activities of the district."[4] Unlike the other members of the High School Staff, these men were without professional training. There was no Adolescent School Attendance Act to insure attendance. The farmers-to-be felt no need of instruction in agriculture. To build up a class that

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[1]For list of activities, see Minister of Agriculture, Annual Report, 1921, pp. 49-90.

[2]Minister of Education, Report, 1922, page 68.

[3]Minister of Agriculture, Report, 1910, p. 42.

[4]Minister of Agriculture, Report, 1910, p. 43.

need had to be created. A long list of extra-school duties devolved upon the District Representative.[1] For these reasons it was impossible to "establish courses in agriculture on a par with the courses in English, classics, mathematics and science," as had been designed.[2] Short courses varying in length from four to six weeks were developed in the High Schools. The work was decidedly practical in nature.[3] "High School teachers in every case have rendered valuable assistance in the way of giving lectures in English, mathematics, physics and bookkeeping."[4]

As the short courses were developed they were gradually severed from the secondary schools. "Experience has demonstrated the wisdom of holding them in different sections of the county each year in order that farmers' sons and daughters may be afforded an opportunity to receive instruction and at the same attend to their duties on the farm".[5] As the work in the secondary schools declined there was a rapid increase in Federal aid for promoting agricultural instruction in the provinces, as provided for under the Agricultural Instruction Act of 1913. These grants have been administered by the Departments of Agriculture in the provinces. The Department of Education withdrew its financial support. The Agricultural Representatives ceased to serve two masters. Their work was divorced from the school system of the province.

The recent development of short course work is depicted in diagrams V and VI. In addition to these short courses there were conducted in 1921-22 under the same direction four winter schools of agriculture and household science, each of twelve weeks duration. The enrolment was 206 boys and 190 girls. In the following year eight such schools were in operation. While the educational efforts of the Agricultural Representatives have developed in many directions,[6] their most important contribution undoubtedly consists in the improvement of agricultural practices through class work in creating among the young men and women a respect, and feeling of need, for organized class instruction in agriculture and household

[1]See Minister of Agriculture, Report, 1910, pp. 43-44.
[2]Minister of Agriculture, Report, 1910, p. 42.
[3]Minister of Agriculture, Report, 1913, pp. 43-44.
[4]Minister of Agriculture, Report, 1914, p. 53.
[5]Minister of Agriculture, Report, 1914, p. 53.
[6]See Minister of Agriculture, Report, 1919, pp. 23-66.

science. It is generally recognized, however, that four weeks or even three months is too short a time in which to train adequately a youth in the theory and best practices of modern agriculture. Besides, by a present peripatetic arrangement, the advantages of class instruction can return to a community only at long intervals.

With the decline in the work of the Agricultural Representatives in secondary schools, comprehensive prescribed courses in agriculture were arranged as options in the secondary schools and en-

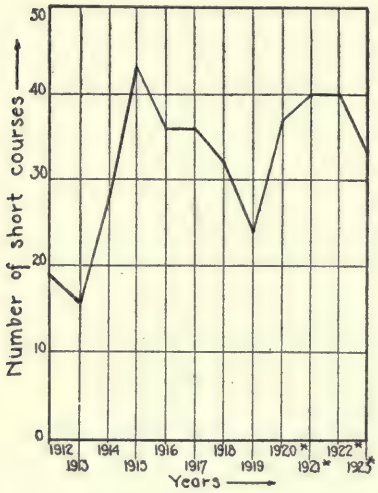

Diagram V, showing the number of short courses in Agriculture conducted by Agricultural Representatives in Ontario in twelve consecutive years. (Data from Minister of Agriculture, Report 1919. *From office of Chief Agricultural Representative).

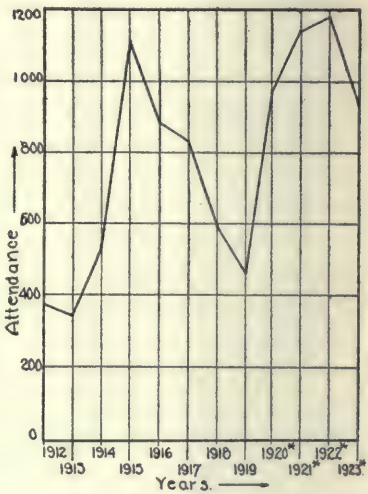

Diagram VI, showing attendance at short courses conducted by the Agricultural Representatives in Ontario. (Data from Minister of Agriculture, Report 1919. *From office of Chief Agricultural Representative).

couraged by a system of grants to teachers and school boards. Large numbers of secondary school teachers have been certificated for the work through attendance at summer schools of agriculture at the Ontario Agricultural College.[1] It is maintained by many that the secondary schools are now in position to meet the situation effectively. An examination of Table I shows that the continuation schools may be regarded as the typical secondary schools of the rural districts. The rate of increase of these schools in recent years is

[1]See Minister of Education, Report 1922, pp. 77-78.

shown in diagram VII. In table 2 we find that the two-teacher continuation schools exceed all others both in number and in the number of teachers employed. The present academic work in these schools must not be neglected. In the majority of these schools, therefore, the teachers are unable to take on the additional duties necessitated by the teaching of vocational agriculture. Table 1

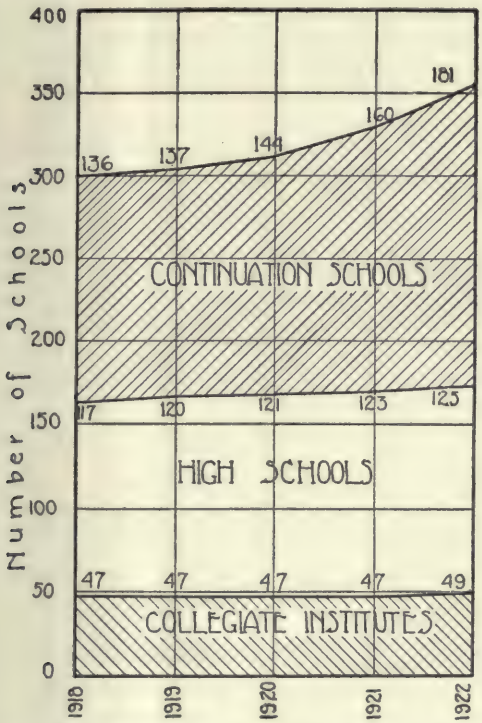

Diagram VII, showing increase in the number of secondary schools in Ontario from 1918 to 1922. (Data from the Minister of Education, Annual Reports.)

shows that a smaller percentage of students study agriculture in the continuation schools than in either the high school or the collegiate institutes.[1]

In the hundred and sixty continuation schools there are only 72 male teachers. In the continuation schools there are 11, and in the

[1]These courses are alternative with biology of the first and second years and physics and chemistry of the third and fourth years.

high schools and collegiate institutes 48, teachers certificated to teach the prescribed course in agriculture. Farm experience is not essential in qualifying for this work. A large number of those certificated are women. We may reasonably conclude that the number of teachers in secondary schools actually fitted to teach vocational agriculture is very small indeed.

Table 1 shows the continuation schools are drawing a higher percentage of their pupils from the farms than are the high schools and the collegiate institutes. 28.9 per cent of all secondary school

	Coll. Inst.	High Schools	Cont. Schools
Number of schools	47	124	160
Attendance, Boys	9119	6102	2304
Attendance, Girls	10302	8605	3519
Attendance, Total	19421	14707	5823
Percentage, boys	47.0%	41.5%	39.56%
Pupils from farms	3263	5320	2951
Pupils from farms	16.8%	36.2%	50.68%
Number of teachers in schools	702	600	288
Average number of teachers per school	14.9	4.8	1.8
Schools teaching agriculture	6	15	3
Pupils studying agriculture	3%	6.3%	2.35%
Teachers certificated in agriculture	48		11
Pupils returned to farms	10.92%		17.14%

Table 1. Pupils and teachers in Ontario secondary schools.
(Data from Minister of Education, Annual Report, 1921.)

Teachers per School	Number of Schools	Total No. Teachers
4	2	8
3	10	30
2	102	204
1	46	46

Table 2. Number of teachers in continuation schools of Ontario.
(Data from Minister of Education, Annual Report, 1921.)

pupils live on farms. Since 41.80 per cent of the population of Ontario dwell in the open country and in unincorporated villages, it may be doubted whether the farmers' sons and daughters are represented in secondary schools to the same extent as are urban boys and girls.[1] Secondary schools as at present organized tend to draw the boys and girls away from the farms and fit them for urban occupations. The extent of this tendency is shown graphically in diagram VIII. In so far as the secondary schools assist boys and girls into those positions in which they will find their fullest development through self-realization and social efficiency, they are

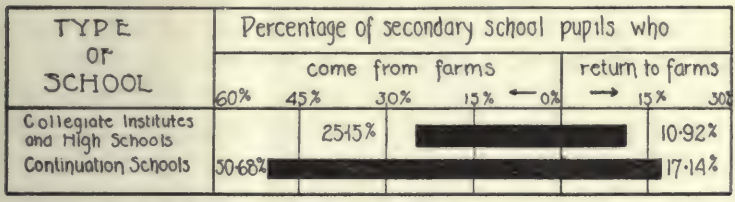

Diagram VIII, showing the percentages of students in secondary schools of Ontario who come from, and return to, the farms. Secondary Schools of Ontario educate for the cities. (Data from Minister of Education, Report, 1921.)

rendering service. Yet in the absence of vocational schools they have a duty and responsibility to provide adequate educational facilities for the rural children who elect to remain on the land.

Provision is made for the establishment of Departments of Agriculture in the secondary schools.[2] Pupils who have completed the sixth grade of the elementary school may be admitted thereto. The entrance requirements thus appear adapted to reach the majority of those students fitted to profit by such courses as are offered.[3] These departments are conducted by academic teachers certificated for the work through summer attendance at the Ontario Agricultural College. Up to June, 1923, only five such departments had

[1]Minister of Education, Annual Report, 1921, p. 178.

[2]See Ontario Department of Education; Agriculture and Household Science in Continuation and High Schools, 1915, and the Vocational Education Act, 1921.

[3]Departmental regulations stipulate that "the minimum apportionment of time per week for agriculture" in such departments is "two afternoons for the first year, three for the second, for Farm Mechanics, one afternoon for each year."

been established. Of these but three remained in operation, each with an average enrolment, in 1922-23, of four students. These departments are designed to operate on a ten months basis. It is seldom, however, that students continue in attendance during the spring term.

The Ontario Agricultural College and the school of agriculture at Kemptville are not attracting prospective farmers in very large numbers; nor are they capable of caring for the vast numbers in need of vocational training. The secondary schools, under control of the Education Department, though numerous, widely distributed and permanently located, offer little of a vocational nature to those who would farm. The Agricultural Representatives, under direction of the Department of Agriculture, are endeavouring, without professional training and without permanent school buildings, to meet the requirements by winter short courses. These at best appear to be of an improvised, temporary, experimental nature. Judged from the standpoint of school accommodation, pupil enrolment and length of school year, provision for industrial and technical training of farmers-to-be is decidedly inferior to that of city workers.[1]

The situation in rural Ontario is fittingly described by Mr. G. K. Mills, Inspector of Continuation Schools, who says that, "the average parent believes in better education for the youth of fourteen, but he feels that the ordinary work of the local school is not what that youth needs. To insist that rural and village pupils shall comply with the provisions of the Adolescent School Attendance Act and continue at school until they reach the age of sixteen, when all that is offered them is a little more grammar, geography, history, etc., taught by a young girl, is futile."[2] The repeal of the Act for rural sections of the province may have been due in large part to the failure of the secondary schools to provide for the youth that type of education which alone can satisfy their need.[3] To be

[1]In 1922-23 government grants to industrial and technical schools, which operate on a ten months basis, were $565,286.35. In technical, industrial and art schools the student enrolment was 6,882 in day, and 17,196 in evening classes. Minister of Education, Annual Report, 1921.

[2]Minister of Education, Report 1921, page 32.

[3]The Adolescent School Attendance Act of 1919 rendered compulsory full time attendance up to sixteen years of age and part time attendance up to eighteen years. In 1923 it was repealed for rural parts of the province.

effectual the training offered adolescent farmers-to-be must be specific and must function profitably in vocational practices.

Through investigations of modern psychologists, educationists to-day are ready to affirm that "a change in one function alters any other only in so far as the two functions have as factors identical elements." "To take a concrete example, improvement in addition will alter one's ability in multiplication because addition is absolutely identical with a part of multiplication and because certain other processes, e.g. eye movement and the inhibition of all save arithmetical impulses, are in part common to the two functions." The improvement in any single function rarely brings about equal improvement in any other function, no matter how similar, for the working of every mental function-group is conditioned by the nature of the data in each particular case.[1]

The formal disciplinary theory, that abilities developed in one field of endeavour could be turned to account without diminution in any other similar field of activity, gripped the minds of theorizers for decades. The sagacious, practical farmers of Ontario never accepted it either in theory or in practice. The universities with their lecture rooms, libraries and gymnasiums have never been popular as institutions for training men and women how to farm. Indeed observation has taught them to regard a degree from an agricultural college as more fittingly symbolical of a profession than of successful farming. It is quite possible, on the theory of specific training, that even an agricultural college course may unfit young men for farming. "Having been somewhat observing of the rising generation, especially the boys, my opinion is that, if you compel them to attend school until they are sixteen or eighteen years of age, a large percentage of them will want to continue to wear the white collar."[2]

To-day when advocates of agricultural education are seeking continuance of Federal aid for their cause, enlightened officers and members of the United Farmers of Ontario oppose the measure on the ground that the place to teach farming is on the farm. Modern psychology supports this view. Shall we, therefore, leave the teaching of agriculture to those who follow that occupation and con-

[1]Thorndike, Educational Psychology, 1903, Chapter 8.

[2]Harding, R. H., Farmers' Advocate, No. 1590, page 389.

tinue to spend money on experiment stations with the hope that in some haphazard or chance way the results of such scientific investigations may get across to the man behind the plough and improve his methods? Or shall we build special schools of agriculture at which farm boys and girls may board in winter, severed from the home farm with its opportunities and responsibilities while ideas about agriculture are packed away in cold storage to be applied by the students when they return to the farms, if perchance they have sufficient leisure and ability to resuscitate those experiences when and where they are most applicable?

The vocational education of the Ontario farmer has been already too long neglected.[1] In succeeding pages, we shall show the inadequacy of special schools of agriculture to satisfy requirements. The need in Ontario to-day is a type of school which will receive the boys and girls from the elementary schools at about fourteen years of age, enable them to live at home, participate in the activities of the farm, and give them such instruction and training in agriculture and related sciences, English, history, civics, etc., as will render them vocationally and socially efficient. To show that such an institution for training in vocational agriculture can be placed within reach of the people at a reasonable cost to the province and students alike, is the problem before us. It is not intended to provide a panacea for all the ills of rural life, but it is intended to point out a means of assisting the boys who are amenable to that education which best fits for life on the farm.

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[1]See the Report of the Royal Commission on Industrial and Technical Education, part 1, page 46.

CHAPTER II.

THE STUDENTS.

WITH a view to determining the class of students available for vocational courses in agriculture, questionnaires[1] were submitted through their teachers to the secondary school students of agriculture, and to the students of agriculture and household science in the winter schools. The replies are summarized in appendixes B. C. and D.

The origin of the students of agriculture in secondary schools is shown in table 3. Of the 678 boys who replied 60.8 per cent had no farm experience. Of all the students who replied only 17.3 per cent were boys who had lived on farms. The academic standing is shown in diagram IX.

	Boys	Girls	Total
Live on farms, raised on farms	189	325	514
Live on farms, raised in town	34	21	55
Live in town, raised on farms	43	61	104
Live in town, raised in town	412	463	875
Total	678	870	1,548

Table 3, showing origin of students in agricultural classes of Ontario secondary schools, 1922.

Prospective destination	Boys	Girls	Total
Teaching school	68	441	509
Farming	47	13	60
Attending Agricultural college	22	0	22
Attending university	217	77	294
Other occupations	275	299	574
Total	629	830	1,459

Table 4, Prospective destinations of students in agricultural classes of Ontario secondary schools, 1922.

Occupational aims, stated by 1,459 students, are expressed in table 4. 7.5 per cent of the boys pursuing the agriculture option in

[1]Appendix A.

these secondary school classes look forward to farming as a life work. Of all the students pursuing agriculture only 3.2 per cent were boys who intend to farm. Twenty-two boys or 1.5 per cent of these students, expressed the intention to enter related fields through the Ontario Agricultural College. Intentions of adolescents may fail to be realized. To determine the occupations of students

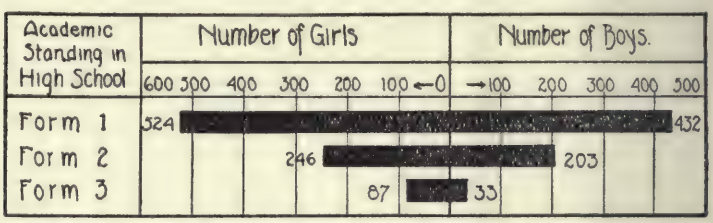

Diagram IX, showing the academic standing of students of agriculture in secondary schools of Ontario, 1922. (Data from questionnaire.)

of agriculture who left, or graduated from, school in 1922, a questionnaire[1] was addressed to teachers of agriculture.[2] Table 5 shows the actual occupations of these ex-students. Only seven of the twenty-four schools carried agriculture beyond the second year. The vast majority of the students continued at school. This fact

Occupation	Number of Students	Percentage of Students
Farming	68	32.0%
Attending a normal school	54	25.5%
Attending agricultural college	2	.9%
Attending university	6	2.8%
In other occupations	82	39.0%
Total	212	100.2%

Table 5, Occupation of students of agriculture who left secondary schools in 1922.

renders table 5 unreliable as an index to the percentage of students of agriculture who actually become farmers. Paucity of data precludes a reliable conclusion. It is very probable that a higher percentage of those who drop out early than of those who continue at school beyond the second form will farm. If this be true, the per-

[1]Appendix A. [2]For detailed summary of replies see appendix E.

centage of students of agriculture who will ultimately become farmers is less than that shown in table 5.

Much of the foregoing data are presented graphically in diagram X. It is evident that only a minor proportion of the students of

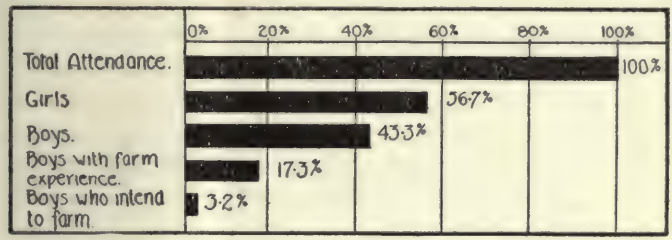

Diagram X, showing sex, farm experience and intentions to farm of students of agriculture in secondary schools of Ontario, 1922. (Data from questionnaire.)

agriculture in our secondary schools will return to the farms. The work of these classes is not primarily vocational.

In New York and Massachusetts departments of vocational agriculture have been established in many of the high schools. The

State	Farming	Related Fields	Total
[1]New York, graduates of four year curriculum....	45.2%	25.0%	70.2%
New York, undergraduates of four year curriculum	41.8%	5.7%	47.5%
[2]Mass.—Graduates	97.1%		

Table 6, showing destinations of students on leaving departments of vocational agriculture in American High Schools.

destinations of the students are shown in table 6. The courses given prepare students for farming and for admission to the state agricultural college. In addition they appear to serve as vocational guidance courses for many students.

[1]Dr. Eaton, Vocational Education, Rural School Survey of New York State, page 142.

[2]Dr. Stimson, State Supervisor. In reply to questionnaire, 1921-22.

Since the students pursuing agriculture in secondary schools of Ontario are not preparing to farm, is there any evidence of desire for vocational training on the part of those entering farming? The increase in popularity of the winter short courses in agriculture conducted by the Agricultural Representatives, may be seen by an examination or diagrams V and VI. Records of ages and farm experience for these students are wanting. Reports convey the impression, however, that the vast majority are farm boys of adolescent age in search of self-improvement for a career in farming.[1] In appendix C will be found material relating to the students in the winter schools of agriculture. An examination of diagram XI shows that almost all the students have lived on farms and

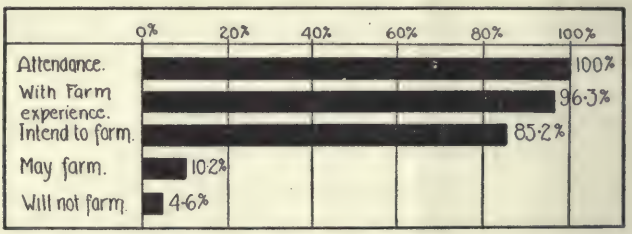

Diagram XI, showing farm experience and intentions to farm of boys attending winter schools of agriculture in Ontario, 1921 to 1923. 198 cases. (Data from questionnaire.)

nearly all expect to be farmers. Only 4.6 per cent of the boys have definitely decided in favour of other occupations. Through a questionnaire submitted to the students by Mr. W. J. Bell, principal of the school, it was found that, of 42 boys in attendance at the school of agriculture at Kemptville in 1921-22, over 97 per cent had farm experience. With one exception all expressed the intention to farm. The exception was a doubtful case. While the enrolment at these various classes and schools in 1923 was slightly less than 1300 students, yet it must be remembered that apart from the Ontario Agricultural College, only 42 such classes and schools were in operation within the province. Were the opportunity for vocational education placed before all the farm boys of Ontario, it is reasonable to believe that they would respond in about the same proportion as

[1]Minister of Agriculture, Ontario, Annual Reports, 1910-1922.

have those in districts where schools and classes have been established.

Further evidence of this desire on the part of farm boys and girls for education beyond that offered by the elementary school is to be found in a study of diagram XII. It will be seen that, while the vast majority of the pupils pass directly from the elementary school to the farm, nearly 25 per cent of the boys in attendance at winter schools of agriculture had previously attended secondary schools. Approximately 70 per cent of the students in the school of agriculture at Kemptville had some high school training. The fact that the vocational courses attract these students when the secondary schools fail to hold them longer, indicates that the need

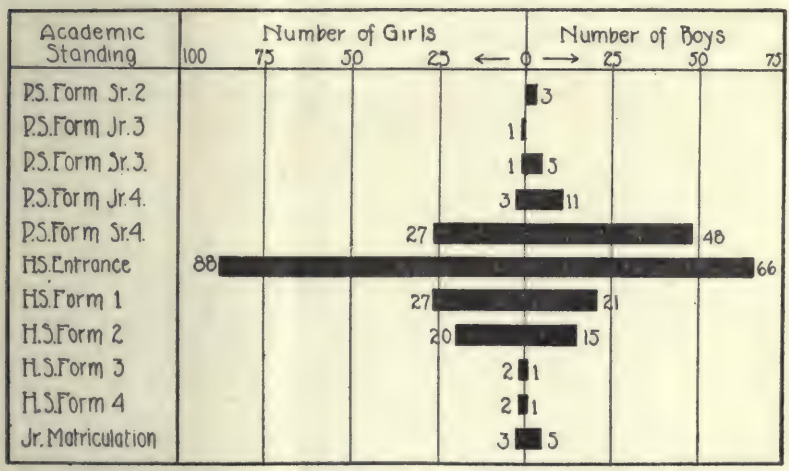

Diagram XII, showing the academic standing of girls in household science and of boys in agriculture in winter schools in Ontario, 1921 to 1923. (Data from questionnaire.)

for vocational education is felt by the farmers-to-be. The high esteem in which farm boys and girls regard the vocational courses in agriculture and household science is further revealed by the vast numbers of pupils who fail to pursue their academic studies beyond the elementary school but who are ready to avail themselves of vocational education when the opportunity is presented to them.

Statistics are not available to show the number of young men between the ages of fourteen and eighteen years who are entering on farming in Ontario. In 1918 there were on the farms of New York

State, 16,000 boys sixteen, seventeen and eighteen years of age, and 4,000 others nineteen and twenty years of age, who were not in attendance at school.[1]

That the number of young men in Ontario is large may be inferred from a study of diagram XIII. It will be seen that there is

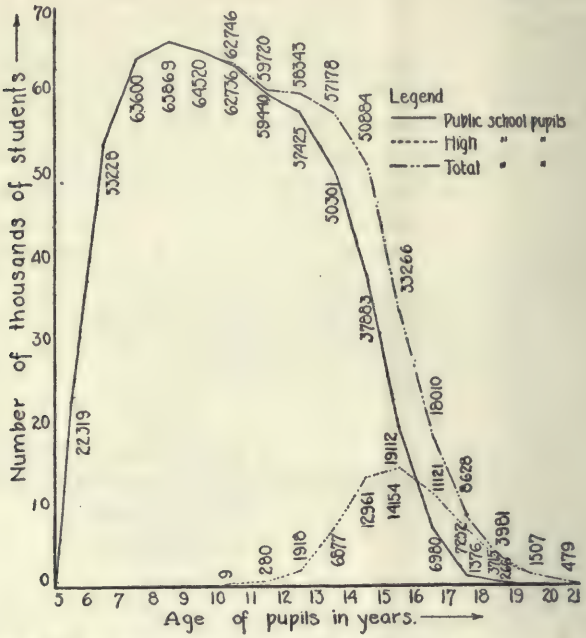

Diagram XIII, showing attendance of pupils by ages in elementary and secondary schools of Ontario. (Data supplied on request by the Deputy Minister of Education, Nov., 1923.)

a very marked falling off in attendance at school after the age of fourteen years. The attendance of sixteen year old students in

	Girls	Boys
Continuation School	59%	41%
High Schools	56%	44%
Collegiate Institutes	51%	49%

Table 7, showing percentages of girls and boys in secondary schools of Ontario. (Data from Minister of Education, Report, 1921.)

[1]"Our Boys," by H. G. Burge, New York State Military Training Commission Survey.

elementary and secondary schools is little more than thirty per cent of that for pupils of fourteen years.

Table 7 shows that in larger centres girls and boys attend secondary schools in approximately equal numbers. In the country the percentage of boys in attendance is much smaller than that of girls. This would seem to indicate that the secondary schools are not attracting the boys of the country as they are those of the cities.

"Due in part at least to the Adolescent School Attendance Act, a large increase—22.5 per cent—in the total attendance at the secondary schools for the school year 1921-22 over 1920-21 is recorded as below."[1]

	"1920-21	1921-22	Increase per cent
Continuation Schools	5,823	7,505	28.8%
High Schools and Collegiate Institutes	34,128	39,405	19.1%
Day Vocational Schools (full time pupils)	2,600	5,344	56.7%
	42,551	52,254	22,8%"

An examination of these figures shows that the enforcement of the Adolescent School Attendance Act produced an enormous percentage increase in attendance in the urban vocational schools, but a comparatively small percentage gain in urban secondary schools. In the continuation schools which serve those rural parts of the province devoid of opportunity for vocational education, the percentage increase in attendance was decidedly high. While this increase was less than 26 per cent for girls it was more than 33 per cent for boys.[2]

Without giving the boys and girls of the country the choice that lies before the urban youth of pursuing what best fits them for their future occupations, they were forced into academic classes with those preparing for the business and professional careers of the city. The farm boy is conscious of a need for further education. Like the urban youth, however, he demands that his secondary education shall equip him for his life work. The secondary school student of to-day who pursues a curriculum with zest thinks little of education

[1]From Minister of Education, Report, 1922, page IX.

[2]Minister of Education, Reports, 1921 and 1922.

for education's sake, but is dominated by a desire to attain a goal in that profession which opens up to him or her at the close of a successful school career. It is the thought of a successful future career that gives to the student of the urban vocational school the courage and will to surmount aggressively the difficulties of his chosen curriculum. The farmer-to-be with intelligence and vigour is not ready to submit to a programme of secondary education less practical and less suited to his needs than that provided for his brother in search of a profession or an urban vocation.

In view of the data set forth in this chapter, it may be stated that the students in vocational schools of agriculture must come from that great army of youth who at present pass directly to the farm from the secondary schools and from the fourth form of the elementary schools, with or without High School Entrance standing. Records of students in attendance at the winter schools of agriculture, conditions in New York State, the percentages of boys and girls in continuation schools of Ontario and the more rapid rise in the percentage of the former than of the latter under the Adolescent School Attendance Act, together with a consideration of the thousands of boys who must enter upon farming each year to sustain the industry, leads us to conclude that the number of young men on the farms of Ontario who would profit by agricultural education is sufficiently great to justify provision for vocational education comparable to that devised for the youth of towns and cities.

It may not now be out of place to enquire whether vocational education in agriculture should be imparted immediately at the close of the elementary school period, as is done in the United States, or whether it should be deferred until later adolescence, as is the case in Denmark.[1]

A comparison of students by ages in our winter schools of agriculture and household science with those in secondary schools may show whether the desire for vocational education is late in maturing. Data relative to the case are presented in diagrams XIV and XV. It will be seen that students attending winter schools of agriculture are older than those in the agricultural classes of the secondary schools. While the median age for the former group is two years

[1]See United States Bureau of Education
1914 Bulletin No. 22, Foght, H. W.
1915 Bulletin No. 45, Foght, H. W.

above that for the latter the difference is probably due to lack of earlier opportunity for vocational training. Since the "modal" age for boys in attendance at winter schools of agriculture is 16.5 years, under present meagre provision for vocational education, it is improbable that the vocational training of youth for agriculture in

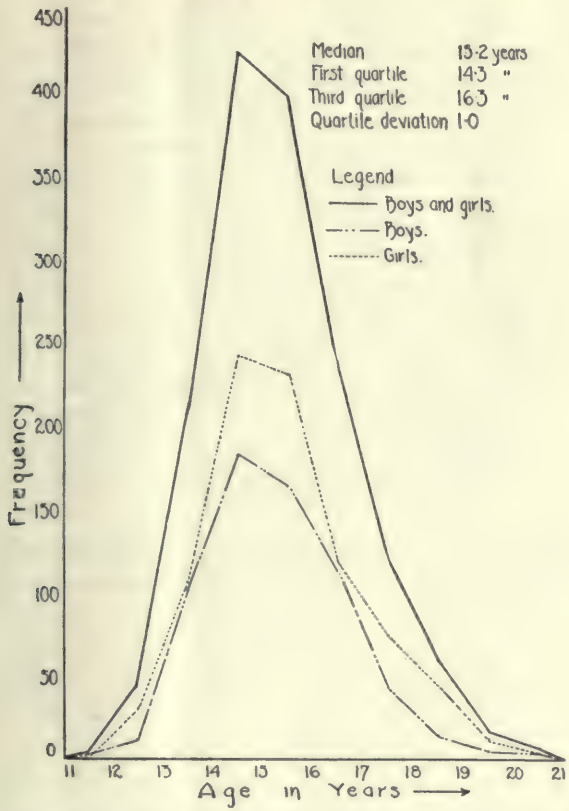

Diagram XIV, showing numbers of students of various ages in secondary school classes in agriculture in Ontario, 1922. 1527 cases. (Data from questionnaire.)

Ontario should be deferred until late adolescence. Diagram XIV indicates that many boys of Ontario desire this education at the beginning of their farming career. When vocational education is provided for adequately, enforcement of the Adolescent School Attendance Act in rural parts of Ontario will undoubtedly provide

students, as it has done in the cities and it will remove unfair discrimination against the country boy by tending to equalize educational opportunities and standards throughout the province.

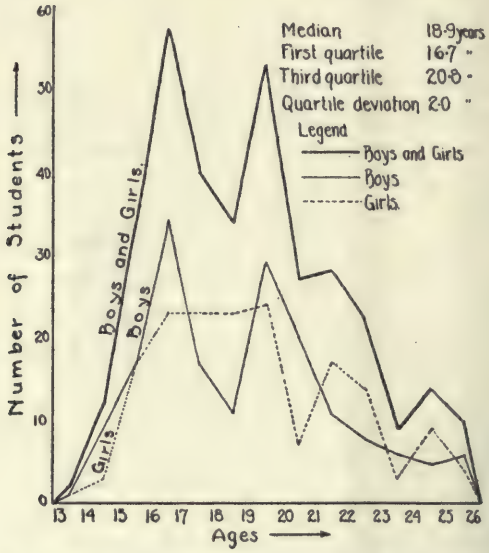

Diagram XV, showing numbers of students of different ages in attendance at winter schools of agriculture and household science, 1921 to 1923. 352 cases. (Data from questionnaire.)

CHAPTER III.

THE SCHOOL.

Where Shall We Teach?

In the early part of the twentieth century the accredited school of agriculture was the special institution set apart, usually in a small village or in the open country, expressly for the teaching of agriculture and with or without provision for courses in household science. Such schools are to be found in Denmark, England, Ireland, the United States and in Alberta. In 1920 a school of this type was opened at Kemptville in Eastern Ontario. In the United States "the high water mark in establishing special schools was reached in the school year 1907-8, during which 15 schools were opened, or more than twice as many as have been established during any one year since. The decline in the establishment of special schools of agriculture, however, has been compensated for by . . . . . granting state aid for the support of departments of agriculture . . . . . in high schools already in existence."[1]

As pointed out in chapter I, an effort was made in Ontario in 1907 and succeeding years to have agriculture taught in high schools by agricultural college graduates. The causes of failure have been briefly mentioned. The idea took root in the United States and, through compliance with the Smith-Hughes Act, has resulted in the establishment of departments of vocational agriculture in the high schools of every state in the Union. Diagram XVI shows the phenomenal growth of this movement in New York State, which may be regarded as representative.

Whether guided by achievement in other land or by conditions at home, those who provide facilities for vocational agricultural education in Ontario must choose one of two procedures; either they must open vocational departments in existing schools, or they must build special schools of agriculture similar to that at Kemptville. To offer such advantages to the masses, the choice must be de-

[1]Robinson and Jenks, U.S. Bureau of Education, Bulletin No. 6, 1913, page 2.

termined by the distances boys and girls are willing to travel to school and by the relative cost and relative efficiency of the two types of schools. To determine these distances a questionnaire[1] relative to the matter was submitted to the teachers in many secondary schools of Ontario. Only pupils who live on farms supplied the information. This was done by a showing of hands. Data were secured similarly from normal school students who reported the distances they travelled to high school during each year of attendance. The results are shown in diagram XVII. It is seen that of the 4816

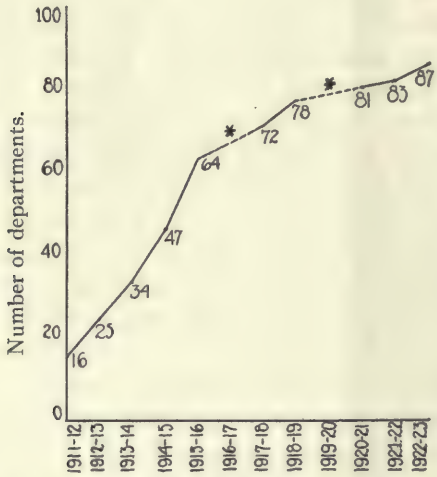

Diagram XVI, showing increase in the number of departments of vocational agriculture in the high schools of New York State. (Data from office of State Supervisor, Albany.) *Number not at hand.

farm boys and girls who responded, fifty per cent lived within 4.4 miles, and 75% within 7.3 miles of the school. To determine whether the smaller attendance from the more distant parts is due to overlapping of natural school districts the principals of certain high schools who had replied to the questionnaire were asked to state the distances from their schools to the nearest secondary schools of various types.[2]

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[1]See Appendix A.

[2]See Appendix F.

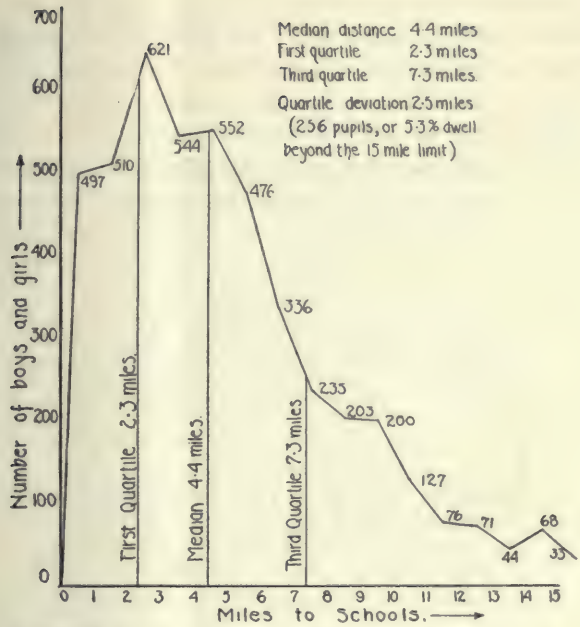

Diagram XVII, showing numbers of boys and girls who travel various distances to secondary schools of Ontario. 4816 cases. (Data from questionnaire.)

Table 8 shows the material gathered from eight replies received.

	Distance from secondary school to nearest			
School centre	Fifth class	Continuation school	High School	Collegiate Institute
Burford	.....	9 miles	10 miles	10 miles
Caledonia	7 miles	8 miles	9 miles	15 miles
Hagersville	6 miles	12 miles	9 miles	18 miles
Lucan	9 miles	7 miles	12 miles	17 miles
Markham	.....	8 miles	12 miles	16 miles
New Hamburg	9 miles	9 miles	none near	14 miles
Orangeville	15 miles	6 miles	16 miles	32 miles
Trenton	12 miles	8 miles	10 miles	30 miles

Table 8, showing distances between Secondary Schools in Ontario.

It is evident that within a radius of four or five miles of each of these schools the competition for students can be only very slight.

Assuming a uniform distribution of population, if this area be divided into concentric zones one mile in width extending outward from the schools, the pupils drawn from the various zones should be in proportion to the areas of the zones. These areas bear to each other the ratio of 1:3:5:7:9.[1] In diagram XVIII the actual attendance for each zone is compared with that of the innermost which is taken as standard. Evidence is wanting to show (1) the

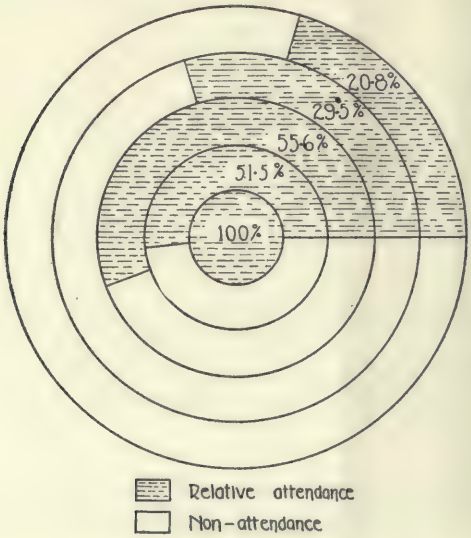

Diagram XVIII showing the percentage attendance at secondary schools of Ontario of farm boys and girls from concentric zones one mile in width about the schools. Attendance within the inner zone is taken as standard. (Data from questionnaire; 296 students representing eight secondary schools.)

number of boys and girls of secondary school age within the inner zone who do not attend, (2) the area within the inner zone in village lots rather than farm lands, which would tend to lessen the farming population of the zone, (3) the variation in density of population within the whole area. It is clear that the distance to school is a very important factor in determining school attendance. It is

[1] from the formula $R-(R-1)^2$.

probable that the rapid decline in attendance of boys and girls relatively close to secondary school is due to a difference in ideals. Those within the inner zone accompany their urban friends to high school. Those farther away follow the example of their associates who see little advantage in advanced academic education. The boundary zone of possible daily attendance lies, as we have seen, at a greater distance from the school.

The distances that students travel to winter schools of agriculture and household science were ascertained by questionnaire.[1] Diagram XIX which represents these distances shows a striking resemblance to diagram XVII, not only in form of curve but also in the positions of the median and quartiles. In the case of the winter schools the centres were so far apart that overlapping of natural school districts was entirely eliminated.

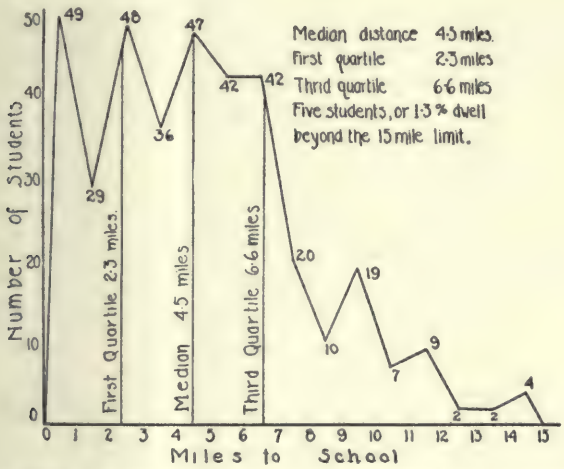

Diagram XIX, showing numbers of students who travel various distances to winter schools of agriculture and household science in Ontario, 1921 to 1923. 371 cases. (Data from questionnaire.)

The distances boys travel to attend the Kemptville school of agriculture is shown in diagram XX. Here the vast majority of the students live between 15 and 55 miles from the school. Table 9 shows the distance students travel to schools of agriculture and household science in Alberta. Omitting Raymond,[2] it will be seen

[1]See Appendixes C and D.

[2]The Mormons of this district move into town in winter.

that nearly all the students come from beyond the 15 mile limit and and less than 7 per cent live at home.

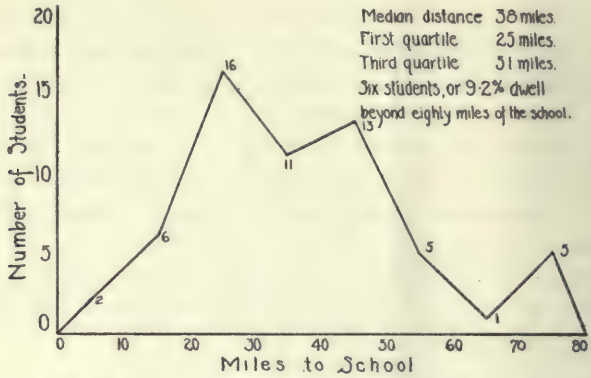

Diagram XX, showing numbers of students who travel various distances to the school of agriculture at Kemptville, Ontario, 1921-22 and 1923-24. 65 cases. (Data from questionnaire.)

Distances in miles	0-3	3-6	6-15	15 and over	
Gleichen	7	0	1	23	
Raymond	42	4	0	10	
Olds	5	0	2	107	
Youngstown	1	1	0	37	
Vermillion	2	1	0	40	
	57	6	3	217	283

Table 9, showing the numbers of students from various concentric zones about the agricultural schools of Alberta, 1922.

In 1921 the rural population of Alberta was 365,550, yet five of the six schools of agriculture and household science attracted only 205 boys and 78 girls. Table 10 shows that special schools of agriculture are not largely attended. To each of these schools students come great distances. At the same time they serve a very small percentage of boys of the district. In Denmark the attendance in 1910-1911 at schools of agriculture ranged from 7 to 111 students with a median, for total attendance, of 61 students.[1]

[1]United States Bureau of Education, 1915, Bulletin No. 45—Foght, H. W.

Place	Number of Schools	Enrolment 1921-22	Average attendance per school
Alberta	6	245 boys	41 boys
Wisconsin	6	353 boys	59 boys
Massachusetts	5	371 boys	74 boys
New York	6	600 boys	100 boys
Ontario	1	42 boys	42 boys

Table 10, showing enrolment in special schools of agriculture. (From records and officials of Departments concerned).

In connection with the Rural School Survey of New York State Professor G. A. Works, Chairman of the Committee, investigating the distances that boys and girls travel to secondary school, found conditions not unlike those existing in Ontario. He reports as follows: "It was found that the median distance travelled by non-resident pupils who were returning home daily for the three counties was: boys 3.9 miles and girls 3.5 miles." He further states that "when the distance between school and home becomes so great the boy cannot make the trip to school each day the home feels that he cannot be spared because of the value of his spare time on the farm. The worth of a high school boy's services at night and morning on a dairy farm is no small consideration. Especially is this true when consideration is given to the relatively small labour income of most farmers. The service of his children is frequently a fundamental factor in making it possible for the farmer to maintain his business."[1]

From the foregoing facts the conclusion may be drawn that the special schools of agriculture are adapted to meet the needs of a small class rather than the mass of those who are preparing to farm and who, therefore, stand in need of vocational education. To place vocational agricultural education within reach of the masses of farmers-to-be, it will be necessary to establish schools or departments throughout the farming districts at centres in most cases not more than nine or ten miles apart.

The cost of establishing departments in secondary schools is small in comparison with that of special schools. Table 11 shows

[1]See Works, G. A.—Administration and Supervision; Rural School Survey of New York State, pages 556-557.

the expenditure during four years in establishing and maintaining the Kemptville school and experimental farm. Data are not avail-

	Capital expenditure	Other expendiutres	Total
1918-19	$60,000.00	$20,000.00	$80,000.00
1919-20	45,000.00	15,000.00	60,000.00
1920-21	50,000.00	20,000.00	70,000.00
1921-22	73,000.00	31,000.00	104,000.00
Total	228,000.00	86,000.00	314,000.00

Table 11, showing expenditures on the Kemptville school of Agriculture and Experimental Farm. (From Annual Reports on the Agricultural Instruction Act, 1918-22, Ottawa.)

able to show the cost of providing accommodation for an additional class in secondary school. In both Ontario and Alberta the cost of maintaining special schools of agriculture is linked up with that of operating experimental farms and conducting other lines of work. In Alberta six schools of agriculture and household science with an enrolment in 1921-22 of 246 boys and 89 girls employed 45 male and 15 female teachers.[1] This is an average of 5.6 students per teacher and indicates a high cost per pupil. In New York State an attendance of 12 students, or an immediate prospect of that number, is required for the establishment or continuation of a department of vocational agriculture under state aid. Table 12, complied through courtesy of the respective State Supervisors of vocational agricultural education, shows the cost per pupil in the special schools and in the departments of three states. In these states the cost per pupil in vocational departments is approximately one-third the cost in special schools of agriculture.

State	Special Schools	High School Departments
Massachusetts	$458.19	$141.94
New York	400.00	150.00
Wisconsin	321.56	87.42

Table 12, showing cost per pupil in special schools and in departments of vocational agriculture in three states (1921-22).

[1]Min. of Agriculture, Alberta, Annual Report, 1922.

Diagram XX and table 9 show that in the agricultural schools of Ontario and Alberta very few students live sufficiently near the school to board at home. Records in table 13, compiled from questionnaires, are not complete but are probably nearly representative. It will be seen that the special school is largely a boarding school.

School	Live at home	Board at or near school
Alberta, four schools	7%	93%
Kemptville school of Agriculture	0	100%
Ontario winter schools, agriculture, boys	83%	17%
Ont. winter schools, Household Science, girls	63%	37%

Table 13, showing percentages of students who live at home during school course, 1921-22.

"To require the rural child of High School age to board and lodge in town is to separate him from parental supervision during a critical period in the formation of his character."[1]

This also imposes a financial burden which may hamper him later in getting a start on the land. At the Ontario Agricultural College, in 1923, the cost of board and lodging is from $5.50 to $6.00 per week. A two year course would involve a living expense of between $300.00 and $400.00. This together with the cost of books, clothing, travelling and incidental expenses would necessitate an outlay of approximately $1000.00. In many cases the boy is required at home to assist with chores night and morning unless replaced by hired labour. For financial reasons the special school of agriculture denies vocational education to many farm boys. Others secure it only at great sacrifice.

In the special schools of agriculture most pupils are severed from participation in the activities of the home farm. The seriousness of this is expressed by Dr. F. W. Merchant, General Director of Education for Ontario, who says, "I am convinced that a school alone cannot equip fully a youth as a journeyman in any trade. I am convinced also that some form of apprenticeship should be restored, in which the school and the shop or both, take a part in

[1]Karr, W. J.: Director of Rural School Organization; Min. of Education, Ontario, Report, 1922, p. 49.

the instruction of the apprentice. The function of the school should be to give instruction in the related knowledge and the operations fundamental to an industry, while the apprentice perfects his skill and develops his industrial intelligence at work in industrial establishments under productive conditions."[1]

The work of the ideal school of vocational agriculture would be largely supplementary to the experiences which the boy receives on the farm. The school would direct those experiences and fill them with meaning. Only when the boy lives at home can theory and practice be surely associated. The conclusion here is that in this respect the vocational department in the secondary school is decidedly superior to the special school of agriculture.

In Wisconsin both types of schools have been given a fair trial for years. The writer, by correspondence with Mr. G. W. Gehrand, State Supervisor, received the following statement:—"Agriculture should be developed in the high school rather than established in special schools of agriculture throughout a state or dominion. My reason for this is that we have not gotten the farm mind to appreciate the growing value of a broad education. The high school is intended to furnish just such an education, and it appears to me to be the foundation of true satisfaction, and insight into the large world, with which, and in which, we must learn to cooperate intelligently. The courses given in the high school help to give such an education of the world's work. We find in our agricultural schools the work top heavy and misdirected too strongly toward agriculture as a single objective. It does not seem to get the broad training that boys and girls should have early in their teens." In reference to the county schools of agriculture, he states that "we are not encouraging this type of school because of the low attendance, and the interest farmers seem to take in them." In 1911 Wisconsin had ten county schools of agriculture.[2] In 1922 but six were in operation.[3] "Two of the six schools have had a very hard time to get pupils. The other four have been quite regular in attendance." Of the six schools in Alberta, two, through lack of students, were closed in 1922-23, and two more the following year.[4]

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[1]Min. of Education, Report, 1921, page 17.

[2]Seath, J., Education for Industrial Purposes, page 317.

[3]Gehrand, G. W., in answer to enquiry.

[4]Deputy Minister of Agriculture for Alberta, in reply to enquiry.

During my visit to the New York State School of Agriculture at Cobelskill in August, 1922, the principal stated that arrangements were under way for accommodating a class of rural school teachers-in-training during the following year. "The environment and facilities were suitable for rural teachers." The attendance the preceding year had been 119 students in agriculture drawn from sixteen counties. Had the demand for agricultural training been as great as originally hoped, it is unlikely that the school would have turned to different work. The present value of the farm of 90 acres together with the building and equipment is $250,000.00. This is not an experiment station but a school farm for instructional purposes only. In 1921-22, the interest at 6% on this investment would amount to more than $125.00 per pupil. (We do not know the amount for the Kemptville School of Agriculture.) In summarizing his conclusions and recommendations at the close of a survey of the various state schools of agriculture in New York State, Edwin W. Holton stated:—"The investigator got the idea from his conferences that the State Schools of Agriculture were, in their origin, products of political expediency rather than institutions growing out of the felt needs of the rural people. They represent the city man's idea of the kind of education the farmers should have. . . . . The schools have not been popular with farmers and are not well attended by farm boys. The investigation shows that strenuous campaigns for students have been carried on by each of the schools and with rather discouraging results. . . . . There is very serious doubt as to the advisability of the State supporting six of these schools for agriculture only."[1]

It is interesting to note that the Royal Commission on Industrial Training and Technical Education, in seeking a remedy for the low standards of agricultural practices in Canada, stated—"It may perhaps best be brought about through the co-ordinated farming-project in connection with the intermediate rural schools and rural high schools.[2]

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[1]See Holton, Edwin W., Administration and Supervision, page 583, Rural School Survey of New York State.

[2]Report of the Royal Commission on Industrial Education and Technical Training, page 46.

The advantages of these departments may be summarized as follows:

1. They are in position to serve the masses rather than a particular class.

2. They bring farm and school experiences into very close and intimate relation.

3. Agricultural experts are distributed through the rural districts, and are thus enabled to visit and assist the boys at work on the farms.

4. Since the area served is not so great as in case of the special school, and the variations in types of farming correspondingly less, the teaching can be adapted to the needs of the community.

5. Teachers more easily enlist attendance of boys and thus develop in them ideals which lead to greater achievement. All ideals arise through outward contacts. (May this not explain the low attendance from outlying sections pictured in diagram XVIII?)

6. Pupils are kept under parental influence on the farms where fitting ideals and habits are established.

7. Farmers-in-training associate in school with students preparing for other occupations,—an integrating social factor of marked importance.

8. The financial sacrifice to the pupil is not great.

9. The cost to the public is, per pupil, far below that in the case of the special school.

10. The special school building situated in the open country cannot be disposed of to advantage when closed. Accommodation in a high school can frequently be used to advantage for other work when not required for agriculture.

In view of the foregoing statements, it may be said that the special schools of agriculture are not well adapted to meet the needs of rural Ontario at present. Vocational departments in existing secondary schools offer a solution to one of Ontario's most pressing requirements. Vocational agricultural education should be placed upon a permanent basis by establishing departments for this work in such existing collegiate institutes and high, continuation and consolidated schools as are in a position to attract classes of ten or more students between the ages of fourteen and sixteen years with-

out requiring them to board in town. Additional schools, with similar departments, should be established in these districts in which secondary school facilities are not yet available. The problem of providing for vocational agricultural education in rural Ontario thus resolves itself into one of establishing and maintaining secondary schools, with departments of agriculture, within easy access of the boys and girls who live on the farms.

Since vast sections of Ontario are provided inadequately as yet with facilities for secondary education, we may inquire whether the rural people are ready for a further development of the system of secondary schools. In 1922 a committee composed of representatives of the County Councils of Ontario, called into conference with the Minister of Education[1] to consider facilities for secondary education in rural districts recommended the multiplication of continuation schools, "judiciously distributed over the counties," and the transportation of pupils to and from schools. These schools they say, should grow naturally out of fifth forms of the public schools. Thus it is evident that rural Ontario is not without leadership in the matter of secondary education. A progressive policy is demanded to-day by the people and by the Department of Education alike.

By what means may the development of the system of rural secondary schools be effectively stimulated? As the Continuation School Act now stands any public or separate school board may, subject to approval of the Minister of Education, establish and maintain a Continuation School. Two or more boards may unite for this purpose. By this organization many elementary school sections have no affiliation with a secondary school. Pupils from these sections are permitted, as non-residents, to attend such schools, and the county must bear the cost of their education thereat. The parents or guardians of such students, however, assume no responsibility in establishing such schools. They and their property are not an integral part of the continuation school section. Enforcement of the original Adolescent School Attendance Act would necessitate facilities for secondary school education within the reach of all country boys and girls. Decades since, rural Ontario was divided into school sections, each a unit with rather natural

[1]See Minister of Education, Report, 1922, page X.

boundaries and with a board of school trustees who provided for elementary school education. Improvement in roads and in means of transportation have made larger school sections possible to-day, especially for girls and boys of secondary school age. The early recognition in urban centres of Ontario of the obvious economy and other advantages of graded schools gave rise to the urban board of education which administers effectively and efficiently educational affairs, elementary and secondary, for the city as a whole. Community districts for both elementary and secondary schools are recommended for New York State by the Committee of Twenty-One in their report on the Rural School Survey.[1] Such districts for secondary schools were provided for in Illinois in 1917.[2] By this means all the people of a community assume responsibility for maintaining secondary school facilities. It would seem desirable that the counties of Ontario should be similarly divided into secondary school districts with natural boundaries determined by the desires of the people, and that a secondary school board be elected within each district to administer secondary school education. The board thus created would provide for one or more strong schools as required, but in no case duplicate their number to the detriment of the schools and unnecessary expense to the ratepayers.[3]

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[1]See Works, G. A., Administration and Supervision, Rural School Survey of New York State, page 565.

[2]Works, G. A., Administration and Supervision, Rural School Survey, New York State, page 564.

[3]For detailed account of such district, see Works, G. A., Administration and Supervision, Rural School Survey of New York State, Chapter 33.

CHAPTER IV.

THE COURSE OF STUDY IN VOCATIONAL AGRICULTURE.

FROM the vocational point of view the chief business of a farmer is to produce and market agricultural products at a profit. Without profit he cannot continue in the business. The magnitude of his labour income is a measure of the farmer's vocational success. Hence it is the primary aim of a vocational school or department of agriculture to increase the vocational efficiency of the farmers

Diagram XXI, showing poultry in counties of Ontario, 1922. Each dot represents 20,000 birds.

of the future. It is not the purpose of such a school to promote experimental work among the students. That function is delegated to the experimental farms. The vocational school is concerned with promulgating among its students, in their agricultural undertakings, the most successful agricultural and business practices met with in the community, or such as are known to prove successful.

Diagram XXII, showing milch cows in counties of Ontario, 1922. Each dot represents 1000 cows.

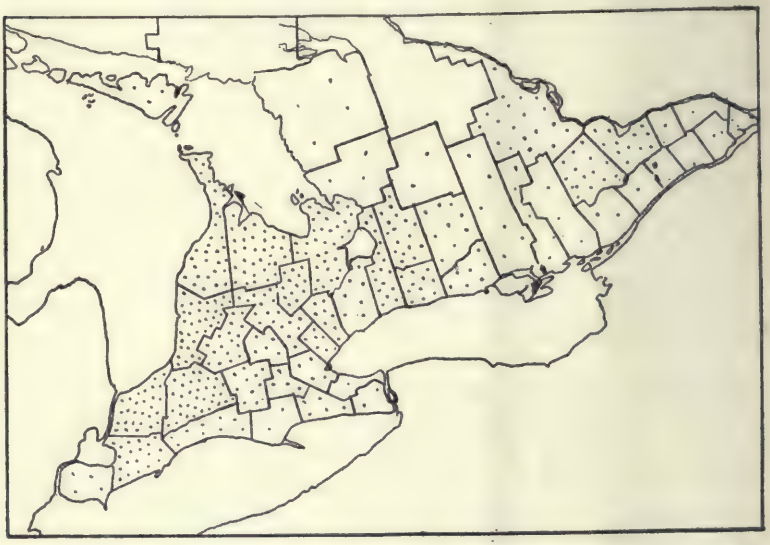

Diagram XXIII, showing beef cattle in counties of Ontario, 1922. Each dot represents 500 steers.

In the secondary schools of Ontario to-day one finds a large number of courses prescribed by the Education Department for the province as a whole. One may reasonably ask whether a course in vocational agriculture prescribed for the entire province would meet the needs of those concerned. An examination of diagrams XXI to XXVII will show that poultry raising is quite generally distributed over the whole inhabited part of the province. Dairying predominates in Oxford and the eastern counties, while beef-raising is most important in the counties bordering on Lake Huron. Similarly crop production is in most instances not uniform for the province. The dairying sections are also those areas within which fodder corn is grown abundantly. Beans are grown chiefly in Kent and Huron Counties; rye in Norfolk and a few counties east of Toronto. Many other examples of special crop areas might be given.[1]

Within the counties, if data were available, would be found certain sections more highly specialized than the county as a whole. Since agriculture in Ontario is highly specialized and diversified, to attempt to train farmers-to-be in all the many types of agriculture practised in the province is futile. To limit their training to those elements which are common, is equally futile. Each farmer is in a sense a special farmer raising special crop or live stock on a particular type of soil under special marketing conditions and in a given social environment. The training offered should be such as will help him succeed under these given conditions. "The agricultural problem is just a great collection of individual problems. Ontario is a large province possessing great differences in soil conditions, in climatic conditions, in transportation facilities. Ontario's agricultural problem, therefore, must be worked out in full recognition of these important facts. To attempt to do so solely by means of a central department or a central college is inadequate."[2]

We may conclude that the course of study for a department of vocational agriculture should be based upon a careful examination of the facts revealed by a study of farm conditions and farm products of the school district.

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[1]See Ontario Department of Agriculture, Crop Report No. 153, 1923.
[2]Minister of Agriculture, Ontario, Annual Report, 1910, pages 44-45.

Diagram XXIV, showing fodder corn in counties of Ontario, 1922. Each dot represents 1000 acres.

Diagram XXV, showing mixed grains in counties of Ontario, 1922. Each dot represents 1000 acres.

Diagram XXVI, showing beans in counties of Ontario, 1922. Each dot represents 500 acres.

Diagram XXVII, showing rye in counties of Ontario, 1922. Each dot represents 500 acres.

The vocational school should take cognizance of the fact that, as an industry, agriculture is dynamic rather than static. While within a given area many features persist with little change from year to year, changes do occur. Some features rise rapidly in importance; others dwindle and pass out. Diagrams XXVIII and XXIX show that in Wellington county oats remain a stable crop.

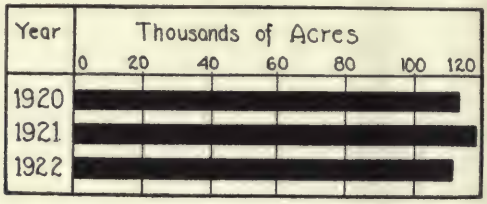

Diagram XXVIII, showing uniformity in area under oat crop from year to year in Wellington County. (Data from Reports of Statistics Branch, Department of Agriculture, Ontario.)

This should be given prominence in vocational study in this county. Alfalfa is coming into more general use. In four years its acreage in this county increased by 92%. The worth of this crop in a school district should be examined into with a view to determining whether more extensive use is justified. If so, the school could hasten its introduction. In Oxford County, spring wheat, once a

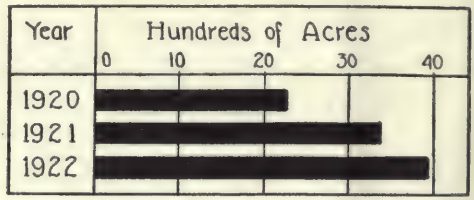

Diagram XXIX, showing increase from year to year in the area under alfalfa in Wellington County. (Data from Reports of Statistics Branch, Ontario Department of Agriculture.)

crop of some importance, would be dropped from the school course before declining to the low level of 1922. Those who frame the course of studies should consider not only present conditions but tendencies as well in so far as these may be revealed through a study of records of earlier years.

While there are marked variations in the types of farming followed in Ontario, there are certain large groups of activities common to all, or nearly all, the farms. We have seen that poultry raising is such an industry. Horses, cattle, sheep and swine are widely distributed, though the breeds vary. Field crops vary; yet they are nearly always present. Farm machinery is necessary. Soil is at the basis of the whole industry. Financial and business considerations are essential. Relatively few farmers are unconcerned with any one of the groups mentioned above. It is possible therefore to frame general headings for a province-wide course of study in vocational agriculture for each school year.[1]

In New York, Massachusetts, Ohio and elsewhere in the United States somewhat similar conditions prevail. In each case a series of broad topics is laid down in the State Plan. With this outline at hand, the details of the course for a school are worked out by the teacher, under guidance of the local advisory committee. For this purpose the teacher is required to assume his duties one month prior to the opening of school in September in order that he may study the needs of the community and have his course approved by the central office before the students enter on their work. The teacher obtains his data from his own rapid survey and observations, from his advisory committee, from conferences with the more successful farmers of the locality and from census returns and crop reports.

In New York State the four year course in vocational agriculture as laid down by the state office is as follows:[2]

First Year—Farm shop work, poultry husbandry, home gardening (if not given in second year).

Second Year—Farm crops, soils and fertilizers, home gardening.

Third Year—Animal husbandry, fruit growing, dairying.

Fourth Year—Farm management and economics, farm engineering and machinery.

Modifications are possible with approval of the state office. In Massachusetts the four year course is arranged as follows:—[3]

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[1]See Eaton, T. H., A Possible Core for a Program in Agricultural Education, School and Society, vol. 6, p. 775.

[2]Eaton, T. H., Vocational Education, Rural School Survey of New York State, page 34.

[3]Massachusetts Bulletin, 1919, No. 4, State House, Boston.

First Year—Gardening. Vegetables and small fruits; making home attractive.

Second Year—Animal husbandry, smaller animals, poultry, sheep, swine and bees. Working for a Profit.

Third Year—Growing fruit and vegetables for sale.

Fourth Year—Animal husbandry, including dairying and general farm management. Agriculture as a business.

The Georgia State Vocational Board has a more detailed outline.[1]

Until experience justifies a change, it would seem advisable that the central Department charged with the duty for Ontario should lay down broad outlines similar to those of Massachusetts and New York, and require that the details be filled in by the local authorities, subject to the approval of the Department concerned. To meet the needs of Ontario under the Adolescent School Attendance Act, the regular course might be abbreviated to two years with provision for a continuation of crop or animal projects and cost accounting for third and fourth years, in accordance with the provisions for part-time attendance. An arrangement somewhat as follows might be devised:—

First Year—Vegetables and small fruits, including soils and fertilizers. Animal husbandry,—poultry, sheep, swine, bees; farm shop.

Second Year—Field crops and orcharding, including soils and fertilizers. Animal husbandry, including horses and beef and dairy cattle; dairying; farm engineering and machinery; cost accounting.

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[1]See Methods in Supervised Practice for Vocational Classes and Schools, No. 5, Georgia State Vocational Board, page 29.

CHAPTER V.

THE CURRICULUM.

IN order to determine a curriculum appropriate for a vocational school or department of agriculture, one should keep in mind the fundamental aim of the institution in which the vocational work is conducted. This aim must necessarily be linked up closely with the successful life of the farmer. The many factors influencing his success may be determined by an analysis of the many duties and responsibilities which he must assume. In a dynamic society this is possible only approximately. In the absence of such analysis it seems advisable to accept the statement of aim by those best qualified, through study and experience, to present it. It has been stated by Dr. A. K. Getman, Supervising Specialist for New York State, as follows: "The four year high school department has the aim: (a) to train and instruct boys and young men for specific farming occupations in the region in which the school is located, (b) to articulate such training and instruction with such economic and social science, related physical science, mathematics and English, as to promote a desirable type of farm and community living."[1] This statement appears to be in agreement with the aim in the minds of those who in 1915 framed the curriculum for departments in Ontario secondary schools, to "provide for a general education suitable for those whose vocation will be some occupation of farm life, as well as for instruction in those special departments."[2]

In New York, Massachusetts and other states completion of a four year high school curriculum in vocational agriculture is accepted as matriculation to the State Agricultural Colleges.[3] In Alberta graduates from a two year course in a provincial school of agriculture are admitted to the provincial college of agriculture when approved by the Board of Agricultural Education.[4]

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[1]Eaton, T. H., Vocational Education, Rural School Survey of New York State, page 57.

[2]See Ontario Department of Education, Agricultural and Household Science Departments, 1915.

[3]See Eaton, T. H., Vocational Education, Rural School Survey of New York State, page 31.

[4]See Minister of Agriculture, Alberta, Report, 1919, page 44.

On visiting certain vocational departments in American high schools, the writer found a number of teachers encouraging their students to enter college. Under the regulations in force in Ontario since 1915, no credit is given toward college matriculation for vocational work in agriculture. To make a course in vocational education subservient to college entrance must surely endanger the primary aim of the work, although it may increase the attendance in such classes. At the Ontario Agricultural College there is apparently a desire on the part of the staff to construct entrance requirements on non-vocational subjects alone. Students thus prepared receive at the college their training in the branches of technical agriculture without the waste of repetition. A good vocational course in agriculture is unlikely to prove a satisfactory subject for college entrance.

In table 14 is to be found a list of the non-vocational subjects prepared in 1921 for vocational classes in Ontario Secondary Schools. Those laid down for New York and Massachusetts are added for comparison. The resemblance is marked.

Ontario, 1921[1]	New York, 1921[2]	Mass., 1919-20[3]
English Literature		
Oral and Written Composition	English	English
History	History of United States	
Arithmetic	Mathematics	
	Biology	Biology
Physics	Physics	Physics
	Chemistry	Chemistry
Civics	Civics	Civics
Elementary Economics	Economics	Economics
		Elementary Science, Drawing, freehand and mechanical
		Shop work
		Bookkeeping

[1]Ontario Department of Education—Agriculture and Household Science Departments.

[2]Eaton, T. H.—Vocational Education, Rural School Survey of New York State, page 32.

[3]Massachusetts Board of Vocational Education, Bulletin 1919, No. 4, page 25.

Geography		Commercial geography and Commercial Law
Physical training and hygiene		Physical training
		Music

Table 14, showing non-vocational subjects in curricula for departments of agriculture in secondary schools of Ontario, New York State and Massachusetts.

In the high schools of the United States as in those of Ontario, where departments have been established in the past, the students in agriculture receive their work in related sciences, etc., with the academic students of the school. While correlation with the work in agriculture is not so close as could be secured by teaching the work to the vocational students alone, the general acceptance of the plan is evidence that the gain from segregation would not at present justify the additional expense incurred in employing an extra teacher. That in many of the secondary schools of this province the academic classes are not too large to accommodate vocational students may be seen by a perusal of the reports of the Minister of Education. Table 15 shows that in 1922 in physiography, arithmetic and zoology classes the attendance in 25% of the continuation schools rarely exceeded 9 students; in 50% it was under 14 students; in 75% few of these classes had more than 20 students. The classes

	First quartile	Median	Third quartile	No. of schools conducting the work
Arithmetic	9.4	14.4	22.7	160
Geography	13.3	18.7	26.4	157
Physiography	8.3	13.2	19.4	158
Zoology	8.0	13.5	20.0	153
Botany	19.8	27.6	42.7	156

Table 15, showing attendance in classes in Ontario Continuation Schools. (Data from Minister of Education, Report 1922.)

in botany and geography were somewhat larger, but in many cases not too great to accommodate still more. Similar conditions prevail in many of the high schools and collegiate institutes. In the larger schools it frequently becomes necessary to establish two or more classes in a subject and this opens up accommodation for extra students. We may conclude therefore that for the present at least

the students of vocational agriculture in our secondary schools should, where possible, receive their non-vocational work with the academic classes of the schools.

Departmental regulations of 1915 require that the time devoted to vocational work in Ontario secondary school departments shall be "for Agriculture, two afternoons for the first year, three for the second; for Farm Mechanics, one afternoon each week." Massachusetts requires fifty per cent of the student's time for project study and the balance for related subjects and general education. In the county schools of agriculture in that state thirty per cent of the time is devoted to the related studies and twenty to general work.[1] In New York State "the organization of a four year curriculum calls for a double period each day for agriculture."[2] It is recommended that non-vocational subjects be confined to half of each day in order that vocational students may be withdrawn from school, if desired, for the other half without disorganizing the classes. This plan was accepted in Ontario in 1915, and is quite generally followed in the United States.

The foregoing facts and conditions seem to justify a selection of the most helpful subjects from the present high school programme of studies in Ontario to round out the vocational student's curriculum and at the same time make possible the division of work on the half day basis. The following Lower School subjects are most closely related to those selected for use in American high school departments as well as to those formerly required in Ontario schools. They appear also to be the best adapted to the needs of the farmer.

Subject	Length of Course
English Literature and Composition	Two Years
Canadian History and Civics	One Year
Physiography	One Year
Geography	One Year
Botany	One Year
Zoology	One Year
Business Procedure or Bookkeeping	One Year

In Ontario schools Physics and Chemistry are taught in third and fourth years. As presented to these advanced students,

[1]See Massachusetts Bulletin of Board of Education, 1919, No. 4, page 24.

[2]See Eaton, T. H., Vocational Education, Rural School Survey of New York State, p. 32.

much of the work would be unintelligible to students in vocational agriculture in the first and second forms, many of whom would not have completed the work of the elementary school. It would seem best that these subjects be taught by the vocational teacher during the time set apart for his work. By this arrangement the subjects taught by the academic teachers would not require more than half of each day.

Under the Adolescent School Attendance Act boys and girls 16 and 17 years of age are required to attend school 320 hours, or approximately three months, per year. There is very little evidence at hand from which to determine a curriculum for these students. With the teaching of agriculture on the project basis the curriculum for the third year might very profitably be composed of project study and economics. Fourth year students would have their projects and records completed. These records would afford an opportunity for effective, intensive study of farm management. It is noteworthy that in many states, the fourth year of the course in vocational agriculture is devoted largely to such work. Such provision would probably demand organization not unlike that of the present winter schools of agriculture.[1]

[1]See Snedden, D., Vocational Education, Chapter 5.

CHAPTER VI.

METHOD.

THE academic course in agriculture taught in a number of our secondary schools is taken up in topical order as outlined in the syllabus of the Education Department. Many of the teachers arrange the topics according to seasonal sequence, so as to relate the work of the classrooms with the agricultural practices of the community. A considerable part of the work is done out of doors, and as nearly as possible under actual farming conditions. For example, incubators are operated in the spring, germination tests are conducted before garden seeds are planted, fruit trees near the schools are grafted in April. In addition to these topical studies, each pupil is required during a two year course to "complete one home project." Table 15 shows a list of projects selected in 1922, and the number of boys and girls who conducted each.

	Boys	Girls	Total
Calf	2		2
Poultry	91	53	144
Bees	7	3	10
Gardening	152	201	353
Potato	3	3	6
Crop Rotation	2	9	11
Strawberries	5	8	13
Canning		62	62
Insect Collection	39	46	85
Plant Collection	26	72	98
Testing Milk	11	5	16
Testing Fertilizers	9		9
Germination Test	5	3	8
Growing Bulbs	3	10	13
Growing a Plant	5	35	40
Total	360	531	891

Table 16, showing projects selected by students of agriculture in secondary schools of Ontario in 1922. Data from questionnaire. Records are incomplete. See appendix A.

Returns do not indicate whether the student is under financial risk or whether economic gain is a motive in the project; neither is there any statement regarding the time devoted to project study in class. It would appear that since the course prescribed is heavy for the time allotted, the so-called project is a side issue rather than the heart of the work. Returns for plot or garden projects indicate that in most cases the area of ground under cultivation is but a small fraction of an acre, and adapted to hand, rather than to horse, cultivation. These are not intended to be vocational projects.

In the departments of vocational agriculture in Ontario secondary schools to-day more extensive outlines are prescribed, and larger projects are expected. Yet here, too, the project is a minor part of the course.[1] "For a discussion of the projects a portion of the time in class should be used." "It is part of the teacher's duty to visit the pupils' homes at least twice during the season, and, for this service a special payment is made to him."[2] The methods followed in the short courses and winter schools conducted by the Agricultural Representatives are not unlike those outlined above. The courses are more intensive and projects of the character outlined are omitted.

The influence of agricultural teaching through these foregoing agencies has undoubtedly improved farming practices. In determining the method or methods to be followed in schools of the future, however, it is not sufficient to show that this or that method produces results. Only the most effective methods should be adopted. We have seen that education is specific.[3] The methods pursued in teaching should therefore be such as will prepare a boy for the specific duties of the farmer. When a boy is withdrawn from the farm and kept at school month after month reading books, writing exercises and discussing problems, he becomes fitted for reading, writing and discussing rather than for farming. The impulses which normally find outlet in productive physical activities are restrained and disappear. The opposite tendencies develop and ripen into habits which persist. The boy no longer wants to farm.

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[1]For a list of topics, see Ontario Department of Education; Agriculture and Household Science Departments, 1915, page 18.

[2]See Ontario Department of Education, Agriculture and Household Science Departments, page 20.

[3]Chapter I.

He receives new ideals from other sources and follows them. To be effective, vocational agriculture must be taught in life situations such as will be confronted in the vocation. True, the farmer must perform such tasks as are taught in our agricultural classes at present; but ability and skill in doing the particular jobs on a farm do not necessarily make one an efficient farmer. To be successful he must be a business man who devises large undertakings, plans his procedure, initiates and executes his enterprises and takes as his reward the gain or loss which the financial risks and obligations of the venture devolve upon him. He purposes, plans, executes and judges each enterprise on the farm. He eliminates the unprofitable elements. In the light of such demands, the methods pursued with agricultural classes in Ontario to-day cannot develop adequately the latent powers of the young farmer.

Dr. R. W. Stimson, Supervising Specialist for Massachusetts, says: "In agriculture, just as in machine-shop work, you need to put the boy into the economic bath; you need to plunge him into it up to his eyes, and keep him there long enough for him to gain the benefit to be derived from actual economic experience. You need to put him in 'all over,' and the sooner you get him in 'all over,' the better." "Give the boy a stake to work for that will stimulate him to accomplish what you desire him to accomplish." "Let us conduct our operations in such a way as to teach the boy the benefit of applying the best methods under extensive field conditions, by showing him a good profit produced by his faithful and carefully directed efforts."[1]

In an endeavour to accomplish this aim, Dr. Stimson devised the agricultural home project.[2] The project method of teaching vocational agriculture proved so effective that in 1921 it had become the accepted procedure in the agricultural schools and departments of all the States except one. It is the outcome of an effort to apply the part-time idea to the teaching of agriculture. An effort is made to organize and direct the home work of the student and to connect

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[1]See U.S. Bureau of Education, Bulletin 1912, No. 6, chapter IV.

[2]For a discussion of the principles underlying project teaching, see (1) Kilpatrick, W. H., The Project Method, and (2) Branom,—Project Method in Education.

it with the instruction of the school in such a way that its educational value is increased.[1]

The essentials of a project in vocational agriculture, have been summarized by Dr. A. K. Getman, somewhat as follows:—To facilitate group teaching, stimulate discussion and create community interest the project should be related to an important part of the subject matter studied by the class during the school year. It should grow out of a real vocational need, because this feeling of need leads to pleasure in the work and satisfaction in achievement. It should be continued through a complete cycle of production,—e.g., from selection of seed corn to selection of seed corn,—and, involve considerable new experience for the student. It should be under the managerial and financial control of the student. It should be extensive enough to involve appreciable financial risk, necessitate planning and the employment of efficient productive methods with the use of farm animals and farm machinery, and make possible cash returns large enough to stimulate real effort.[2]

In those states where the project method is followed the student is required to keep accurate project records and accounts. The objects sought in accounting of projects are: (1) to determine the profit from the enterprise, (2) to furnish a means of studying the business, (3) to develop the boy educationally. The essential features of a project cost account are: (1) the inventories taken, one at the beginning and one at the end, of the project year, (2) a record of all cash or credit transactions, (3) a record of all miscellaneous charges and credits not involving cash, such as residual value of manure or interest on money until crop is sold; (4) hours of labour by boy, man and horse expended on the project.[3]

As practised in the United States, the agricultural project embodies two distinct features, "(1) thoroughgoing study of the farm situations involved in the performance of project work, and (2) productive farm work conducted by the pupil under supervision."[4]

The project study is conducted in the class room largely by the

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[1]Barrows, H. P., United States Bureau of Education, 1919, No. 85, page 23.

[2]See Getman, A. K., The Home Project, University of the State of New York, Bulletin No. 712, June 15, 1920.

[3]See Getman, A. K., The Home Project.

[4]Getman, A. K., The Home Project, page 15.

method of supervised study. This admits of individual variations in procedure to meet the needs of the different students. It probably finds its fullest development in Massachusetts where an effort is made to devote 90 minutes each day to supervised project study. This period is followed by a 45 minute round-up, in which problems common to the projects of the various students are opened out for class discussion.[1]

Project procedure may be somewhat as follows:—The teacher visits the boy on the farm and examines conditions. In the light of the student's natural interests and the facilities available he assists him in choosing a desirable project. The student's chief aim in the project may be financial gain. The aim of the teacher will be to give the boy such wide representative experience in both knowledge and skill as will fit him for the type or types of farming which he desires to follow.

To insure complete managerial and financial control of the project for the boy, the parent or guardian, the pupil and the teacher enter into a written agreement regarding the project and the boy's privileges and obligations. This agreement is made in triplicate and each party to the contract receives a copy. Plans are then prepared in class.

In the project study each student keeps note book records. First the main purpose of the project is stated; then ensues a broad analysis of the project into a series of problems. E.g., in a potato growing project such problems as the following arise,

"1. Choice and preparation of land.

2. Selection and storage of seed.

3. Treatment of seed for planting.

4. Cultural practices.

5. Control of insects and diseases.

6. Harvesting and selection of seeds.

7. Marketing."[2]

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[1]Stimson, R. W., Vocational Agricultural Education.
[2]Getman, A. K., The Home Project, page 18.

Each larger problem now resolves itself into a number of smaller problems. Selection of seed raises such questions as,

"1. Are the local varieties adapted to my needs with reference to soil, drainage, elevation and market?

2. Who are the successful potato growers in this community?

3. Where can I select my seed?

4. Is the crop from which I desire to select seed, disease-free and true to type, and does the crop give evidence of a good yield?

5. What constitutes a good hill?

6. How much seed shall I select?"[1]

The teacher assists in supplying references which are read and recorded. Step by step the problems are analysed and mastered. The records of the plan bear a seasonal sequence readily followed in practice. The plan of procedure is, as far as possible, based on principles gained through a study of related sciences.[2]

By means of the productive farm work the teacher carries the instruction into the agricultural practices of the boy. He visits him regularly at short intervals throughout the project season, examines his daily records, sees that the plan is carried out and offers such suggestions as may be of benefit to the student. In this way instruction in the class room is made to function in farming. When a project is completed, records are studied in school, and its full history recorded. Factors producing profit and loss are determined. Causes of loss are sought for. This analysis affords guidance not only for the student himself, but also for his class mates and succeeding classes in later projects. Thus the results of farm practices become material for class study.

Careful project supervision is regarded as one of the most important duties of the teacher. For this reason he is usually en-

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[1]See Getman, A. K., The Home Project, page 19.

[2]For detailed outlines see (1) Poultry Keeping Project outlines and (2) Project Study Outlines for Vegetable Growing, Massachusetts Board of Education, (3) Methods of Supervised Practice, Georgia State Vocational Board, No. 5, page 43, (4) a unit course in Swine Husbandry, Bulletin No. 68, Federal Board for Vocational Agriculture, Washington, (5) Analyzing a Potato Enterprise, Bulletin No. 74, Federal Board of Vocational Agriculture, Washington, (6) Analyzing a Poultry Enterprise, Bulletin No. 75, Federal Board for Vocational Agriculture, Washington.

gaged for twelve months in the year. In many states he is required to visit each student at least once per week throughout the summer while the projects are under way. In Massachusetts he is given a month's leave of absence for professional improvement and recreation during the winter, when a tradesman is employed to teach farm mechanics. Frequently during the school term, the teacher finds it profitable to dismiss his students for half a day at a time so that they may work on their projects. This affords him an opportunity to supervise the work.

The prominence devoted to project study in vocational courses in American schools varies considerably. In Massachusetts an effort is made to weave the whole four year course in agriculture about a few carefully chosen projects. The project thus becomes the core of the course. It would seem difficult, however, to touch all phases of a farmer's work by this method. Certain authorities say that the supervised farm practice "should be of two types; (1) home practicums, like seed testing or grafting of fruit trees, and (2) home projects. Of these the home project is obviously the more important."[1] The latter arrangement leads to greater variation in class procedure. Part of the agricultural course could then be taught by such methods as are followed in agricultural classes in Ontario to-day. In most states it appears that time is apportioned between project and topical studies or practicums by the teacher according to apparent needs.

In certain American schools, where attendance is not too great, first and second year students unite in one class and third and fourth year students in another. The work of a course is taught only in alternate years. One vocational teacher can then teach the four courses in a school, or he may teach a two year course in each of two adjacent schools.

In August, 1922, the writer visited, in New Medford, Connecticut, a young man, eighteen years of age, who had graduated from the local high school the preceding spring. Throughout the four year course in vocational agriculture he had carried poultry projects. He started with about 15 white leghorn hens. When visited he had a poultry plant of goodly dimensions. The preceding year he

[1]Prosser, C. A., Bulletin No. 21, Federal Board for Vocational Education. Foreword.

marketed 700 broilers. Unable to purchase adjacent property, he bought young chicks for finishing and rapid turn over. He was under contract to supply two local hotels with fowl regularly throughout the year. He had learned to market his surplus products co-operatively in a neighboring city. He kept cost accounts and knew his profit on each pen of birds. He was arranging for an extra year in high school for project work on tobacco growing. His aim was to secure land outside the village, expand his poultry plant and make tobacco growing a side issue. In this vocational department the boy had found his life work. As his school course advanced, he established himself in a profitable industry. While he learned, he earned.

Because of its effectiveness in securing results the project method of teaching vocational agriculture spread rapidly in the United States. The early growth of the movement in Massachusetts and the earnings of the students are as follows:—[1]

Year	No. of students	Earnings
1912	70	$11,100.17
1913	89	17,982.51
1914	235	42,060.73
1915	413	56,254.75
1916	497	84,173.43

While the topical method of teaching vocational agriculture is limited in value, the project method permits of variation in the work to suit the needs of the individual student. It develops managerial skills on the part of the student. It insures the functioning of class room theory in practice. The results of practices are carried back to the school where theory is corrected. Hence principles grow out of practices which they in part determine. Project study brings the student into vital contact with the scientific literature relating to agriculture. It enables the students "to learn while they earn." For these reasons it may be affirmed that the teaching of vocational agriculture in Ontario High Schools should be placed on the project basis. It would seem advisable, however, until conditions justify a change, to retain the topical method for those phases of the work not intimately related to the projects and yet required by the farmers of the community.

[1]See United States Bureau of Education, Bulletin 1919, No. 85, page 24.

To permit of class excursions for field work and facilitate care of the home projects, the organization should provide that the class work with the non-vocational teachers should be confined to half of each day. It is found in Ontario that the Agricultural College and the Universities have drawn their students largely from the farms by opening about the 25th of September and closing in April or early May. It is possible that farm boys 14 and 15 years of age could enter on half-day attendance for non-vocational subjects at the opening of the school in early September, and on full time attendance three or four weeks later, when the pressure of farm work is reduced. It is possible, too, that for them the school year should terminate at Easter or not later than the middle of April. Project work, project records and supervised farm practices throughout the summer may prove to be the best sort of training which a vocational department can offer during this long season.

An examination of the broad outlines for a vocational course laid down in chapter IV, will show that a division of the work into two one-year courses either of which might be taken in advance of the other, would be a simple matter. Such is the arrangement in the schools of the United States where the combined classes do not exceed twenty students, the limit for efficient project supervision by one teacher. Such an organization, we may conclude, should prevail in our departments. If qualified, the vocational teacher could then teach the biology with vocational and academic classes combined.[1] In smaller schools he might act also as principal. Caution must be exercised however, not to overload him with such duties when his extra-school responsibilities are so exacting and important. In many schools it would probably be advisable to give him only vocational work with the students of the two year course and require him to supervise projects and conduct a fair share of the vocational work with the part-time classes. He should be given a period for professional improvement and recreation at such time of year as best harmonises with the welfare of the work.

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[1]In the United States "the tendency is decidedly away from that type of organization which requires a teacher to devote part time to the teaching of vocational agriculture and part time to the teaching of academic subjects." (Federal Board for Vocational Education, Annual Report, 1923, p. 46.)

CHAPTER VII.

ACCOMMODATION AND EQUIPMENT

DEPARTMENTS of Vocational Agriculture in Ontario Secondary Schools have thus far made so little progress, and so small a place has been given to project teaching in agriculture, that it is impossible to gather from these sources, sufficient data to generalize with assurance regarding equipment for vocational work in high schools.

When a department of vocational agriculture is established in a secondary school, the equipment used in teaching the related sciences is that used with the academic classes. The matter of providing suitable plant and equipment involves expenditure for agriculture only.

In the schools visited in New York, Massachusetts and Connecticut and in the schools of other states, the essential accommodation includes a laboratory class room and a farm shop. It is generally maintained that the laboratory class room should be located on the ground floor so that the work of the school may not be disturbed by classes entering and leaving during school hours. An ideal room for such purposes was formerly set apart for the work of this department in the high school at Beamsville, Ontario. This room was situated on the south east corner of the basement, above ground, lighted from east and south, well heated and ventilated and equal in every respect to the traditional class rooms. A door led directly to the outside, facilitating class entrance and departure at any time and affording easy access for grains, feeds, etc., required for class study.

Experienced teachers of vocational agriculture state that ordinary school desks are not suitable. In New York State tables 6 feet long and two feet six inches wide are recommended.[1]

Such tables accommodate abundant material. They can be readily grouped, or removed when space is required for demon-

[1]University of the State of New York, Bulletin 703, page 18.

strations. They serve alike for study purposes and for laboratory work.

An examination of the course of studies laid down in chapter IV shows that laboratory equipment should be provided for the study of soils and fertilizers, garden, orchard and field crop production, animal husbandry, poultry husbandry, dairying, cost accounting and landscape gardening.[1]

The common core of studies in agriculture, outlined in chapter IV, would justify a minimum prescribed list of apparatus for departments of agriculture in high schools. In addition to this it is reasonable to expect that a further list be required of each school to meet the special needs of the particular locality. It would seem advisable that this special list should be decided by the teacher through a study of local needs and should receive the sanction of the local board and the Provincial Department.

The cost of necessary equipment for a class of fifteen or twenty students was estimated in 1918 by the Federal board for Vocational Education to be between $350.00 and $500.00. A department carrying a course of two years only might be equipped to-day for an amount not far in excess of this.

Provision of apparatus and supplies necessitates a store room in which to keep the equipment. This need not be large, but it should be accessible to the class room and conveniently arranged.

A reference library containing a number of well selected books on agricultural topics relating closely to community needs and a large collection of agricultural bulletins from various sources, together with a few good farm papers is usually considered essential to the equipment of a department.[2] Such Bulletins are of little value unless filed in accessible system. Topical arrangement in cardboard filing cases is considered very satisfactory. These were met with in a number of vocational departments in New York and Massachusetts.

The farm shop connected with the high school at Beamsville, Ontario, compares favourably in accommodation with those seen in

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[1]See Barto, D. O., United States Bureau of Education, 1912, No. 6 Agriculture in Secondary Schools.

[2]Massachusetts Board of Education, Bulletin 1913, No. 9, page 7; 1914, No. 7, page 9. University of the State of New York, Bulletin No. 633.

American schools and departments. Here a frame building, set apart, convenient to the school, has large doors to admit farm machinery for class study and repair. Benches and other equipment have been prepared largely by the boys. Wood working tools, vices, etc., are provided to meet requirements. Up to the present, however, the absence of forges and anvils has prevented the introduction of metal working. There appears to be a tendency in Ontario to use the farm shop largely as a manual training room rather than as a place for teaching boys construction and repair work most needed on a farm. This results in part no doubt from the character of the teaching which does not make the vocational project the core of the year's work. In certain North Atlantic States the needs of the student in developing his project determine in great part the character of his shop work. He repairs machinery and prepares equipment for his work. A well equipped shop therefore makes provision for wood working, blacksmithing, tinning, harness repair, drawing, etc.[1]

In several departments visited, the farm shop work is carried on in the basements of the school buildings. In such cases there is usually no direct entrance from the outside. Repair and study of farm machinary must be conducted on the adjacent farms or elsewhere. With the development of departments of vocational agriculture such a condition would surely be found in Ontario. The basement room for farm mechanics has already been met in at least one Ontario high school department of agriculture.[2] Since a well equipped farm shop is an asset to a farm, little objection can be raised to having the students prepare work benches, sewing-horses, racks for tools, etc., required in the school shop.

It would appear advisable in Ontario to utilize for farm shop such basement or other suitable room as may be available in the local secondary school. Should the work in the schools prove permanent and the exigencies of the case demand it, more suitable accommodation could be arranged later. In New York State, 29.32 per cent of the departments established in the decade ending in May, 1921, were discontinued. While in many cases the war called

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[1]University of the State of New York, Bulletin No. 703, page 20.

[2]Oakville.

out the teachers, yet other causes were at work.[1] When the efficient teacher, rather than expensive accommodation, is stressed the work is more likely to be successful and develop. Should a department become defunct, the financial loss to the community is not a serious deterrent to other districts preparing to undertake the work.

The cost of minimum equipment for farm mechanics was estimated by the Federal Board for Vocational Education at Washington in 1918, to be approximately $200.00. Two departments visited in Ontario had on hand similar equipment to approximately the same amount.[2] A small additional outlay should equip these schools for vocational project purposes.

The farm buildings and equipment, farm methods and products are studied or obtained on the farms of the vicinity or at the homes of the students. Certain products are brought to school. In New York State, school boards and teachers are urged to conduct a school plot of from one half an acre to two acres in extent. This is believed to vitalize the teaching of agriculture in the school. Such a plot may provide special material for class study and opportunity for group experience in certain phases of gardening and orcharding practices. It is doubtful, however, whether materials not grown rather extensively in the community should find a place for study in a vocational school course. In Massachusetts a few schools have school plots and these afford practice work of various kinds. On the other hand the farmers of the community are in most cases in sympathy with the teacher and his work and cooperate freely with him. While a greenhouse has been used to good advantage, yet "practice work under economic conditions is proving to be better than practice under school conditions."[3] Since the pupils do not own the projects conducted at school, personal interest is not so keen, and, as a result, greater responsibility falls upon the teacher. He may find it necessary to devote time to the school projects which might be spent to better advantage in assisting students with their projects on the home farms.

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[1]Eaton, T. H., Vocational Education, Rural School Survey of New York State, p. 67.

[2]Beamsville and Oakville.

[3]Massachusetts Board of Education, Bulletin 1916, No. 23, p. 19.

A questionnaire returned by sixteen teachers of agriculture of secondary grade in Ontario showed thirteen using school plots. All the teachers reported demonstrations and eleven conducted experiments. In each case the teacher reported that the difficulty of adequate control and supervision of home projects rendered home enterprises more or less unsatisfactory. Others had entered on the work so recently that they were not in position to offer an opinion. Such a condition must necessarily enhance the value of the school garden. In New York State a rigid agreement among the pupil, the parent or guardian and the teacher, whereby the pupil is assured certain personal responsibilities, rights and freedom, together with complete ownership of the home project, results in such personal interest on his part that the desired experiences in project work are far more effectively obtained on the home farm than at school. The activities involved are those of normal, rather than of artificial situations, and are more likely to function in later life. When the home projects are effectively supervised during the summer months, the value of school plots assumes minor importance. Their continuance might very well be determined by the needs of the situation and the desires of the teacher.

Dr. A. K. Getman, Supervisor of Vocational Agriculture in New York State, regards the school plot an advantage for "group instruction". In Ontario such a plot might very well serve as a private garden for the teacher of agriculture in schools where teacherages were provided. In it he could conduct demonstrations and grow special illustrative materials, if he so desired. It is believed, however, that the students should not be required to perform the labour except in so far as it has educational value.[1]

In New York State no provision is made for housing the teacher. Judging by the teaching experience of the men, we may infer that they are in most cases quite young. For the year 1920-21 the fourth year was the median year of experience. In May, 1921, half of the 76 teachers of agriculture in the state were in the third year or below it, half in the fourth year or above it in teaching experience.[2] The newness of the work may account in part for the

[1]See University of the State of New York, Bulletin No. 703, page 26.

[2]Eaton, T. H., Vocational Education, Rural School Survey of New York State, pp. 123-124.

brevity of tenure. This would not appear to be the sole cause. Twenty teachers left the service in the two preceding years.

In Denmark, on the other hand, teacherages are provided in rural districts. Tenure of office is in most cases secure and long.[1] The difficulty experienced by teachers in securing suitable housing accommodation in towns and villages in Ontario is such as to militate against young men entering or remaining long in such places when tempting offers attract them elsewhere. We have no assurance that provision of teacherages would produce in Ontario the stability of tenure found in Denmark. It would undoubtedly prove an attraction to many men, however. The situation would appear to justify liberal government grants to house teachers of vocational agriculture who would act as school principals and community leaders. A teacherage should receive very careful consideration as a part of the equipment for a secondary school department of vocational agriculture.[2] It would serve among other matters to link the teacher closely to the school grounds and the garden plots. It should increase the tenure of his services. Data for Ontario are not at hand relative to this matter.[3]

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[1]Foght, Comparative Education, Edited by Peter Sandiford, page 425.

[2]See Report of the Royal Commission on Industrial Training and Technical Education, part II, page 288.

[3]Foght, The Rural Teacher and His Work, page 165.

CHAPTER VIII.

THE TEACHER.

THE qualifications of the teacher of Vocational Agriculture can be best determined after an examination of minimum standards both in the United States and in Ontario. In appendix G will be found the requirements set up by the State Board for Massachusetts, while table 17 summarizes those for New York, Ohio and Texas. In table 18 are given the minimum standards for the various teachers of agriculture in Ontario schools of secondary and vocational types. It will be seen that the minimum standards for American teachers include farm experience, college entrance requirements, credits in agricultural subjects, related sciences, humanistic and professional studies.

A comparison of standards shows that in both the departments of Vocational Agriculture in American High Schools and in the winter schools of agriculture in Ontario, the regular teachers are men with one year or more of farm experience. At present no farm experience is required of the teachers with Intermediate and Specialist Standing in Agriculture, who are conducting the classes and departments of Agriculture in Ontario High Schools.[1] While such teachers may conduct an academic course in agriculture very satisfactorily it is generally regarded as fatal to the cause of Vocational Agriculture to place the teaching of this work in the hands of those who have had no farm experience. In the states for which data are at hand the amount of practical experience required for Agricultural College Graduates varies from one to four years. Candidates for a degree at the Ontario Agricultural College "must produce certificates of having spent at least one year at work on a farm and must have a practical knowledge of ordinary farm operations."[2] In the Agriculture Option students must have at least

[1]For qualifications of Teachers in departments of Agriculture in Ontario Secondary Schools, see Recommendations and Regulations for Agricultural and Household Science Departments, pages 8-9.

[2]Ontario Agricultural College Calendar, 1922-23, page 31.

State and Year	Teachers' Standing requirements	Farm experience requirements	College entrance requirements	College Credits Required				
				For degree	In agricultural subjects	In related sciences, economics, etc.	In other subjects	In professional studies, e.g., psychology, etc.
*New York 1923-24	Agricultural College Graduate (approved course)	Two years: college requirements additional	Regents' entrance diploma or examination.	120 semester hours.	47 semester hours 39%	25 semester hours 21%	28 semester hours 23%	10%
**Ohio 1921-22	Agricultural College Graduate (approved course)	2 years after fourteenth birthday.	Graduation from first grade high school course.	136 unit hours	40%	Approved by teacher-training department	English, citizenship, etc.	18 semester housr 13%
**Texas 1920-21	Agricultural College graduate	One year after twelfth	Graduation from four year high school course.	120 semester hours	38 to 40%	25 to 30%	Humanistic studies 15 to 20%	10 to 15%
**Michigan 1923-24	Agricultural College Graduate.	Two years.		Large part prescribed; part elective.				One year.

Table 17.—Showing requirements of teachers of vocational agriculture in various parts of the United States.
*Through courtesy of Dr. T. H. Eaton, 1923.
**From State plan.

Grade of teacher	Farm experience required	Academic standing	Training in agriculture	Professional training
I. Intermediate certificate in agriculture.	None.	First class certificate or university degree.	10 weeks in agriculture and related sciences at the Ontario Agricultural College.	1 year for teaching academic work.
II. Specialist certificate in				"
1. University specialist in science.	None.	B.A. Specialist in science	18 weeks.	
2. Ontario Agricultural College graduate (a) B.S.A.	1 to 3 years (college requirement)	Jr. matriculation Honour matriculation in English, history and mathematics.	4 years at the Ontario Agricultural College.	"
(b) B.Sc. (agr.)	Not stated.	2 years in university.	2 years at the Ontario Agricultural College.	"
III* Most teachers for winter schools and short courses in agriculture	1 to 3 years (college requirement).	Ontario Agricultural College matriculation.	4 years at the Ontario Agricultural College.	None.

Table 18.—Showing requirements for various certificates for teaching agriculture in secondary schools of Ontario. 1923.
*Not all these men are college graduates.

three years of such experience. The Agricultural Representatives who conduct an important part of the work in the agricultural short courses and winter schools are chosen for their positions because of their fitness for the work. The vast majority of these men carried the Agriculture Option in college. Their success in teaching agriculture seems to be our best guide in determining minimum standards of practical experience.

Here, as in certain American states, experience gained during mornings, evenings and holidays while attending secondary school and college might very well be taken into consideration. This would enable a student to pursue his school career unbroken. The requirement in regard to farm experience should be such as will exclude all who are familiar in theory only, with agricultural practices. In the light of the data available, it would seem reasonable that the prospective teachers of Vocational Agriculture should be required to produce a certificate of having spent at least three years on a farm after the fourteenth birthday and produce evidence of skills in the ordinary farm operations.

College entrance requirements in the states named in table 17 are fairly uniform and conform closely to junior matriculation standing in Ontario except that the high school credits do not necessitate a knowledge of foreign languages. In Ontario a four year high school curriculum is required for entrance to either the Normal Schools or the Universities. In conformity with this standard, all teachers of Vocational Agriculture who are certificated to teach related sciences in a secondary school should be required to obtain either Junior Matriculation or Normal Entrance standing with or without foreign languages. Since the continuation schools, which predominate in the rural sections, carry at most only four years of high school work, and since the teachers of vocational agriculture must necessarily come from the farms, a standard higher than that stated above would tend to militate against the farm boy's entering the work. Until the rural secondary schools are in position to offer upper school work, entrance on a vocational teachers' course in the Agricultural College, should be made possible for those who attain Normal Entrance or Junior Matriculation standing, or show evidence of having completed successfully twenty four unit courses at present prescribed for Normal Entrance or Junior Matriculation.

For teachers who do not teach school subjects other than vocational agriculture, it is doubtful whether requirements should be different from those for matriculation at present into the Ontario Agricultural College. In Ontario, as in Massachusetts, much of the vocational teaching of agriculture is done by men, without university matriculation standing, who have ample farm experience and Agricultural College training to enable them to teach the vocational courses successfully. Further evidence in this regard for Ontario is wanting.

The agricultural college training required of vocational teachers varies from place to place. In Massachusetts those who teach agriculture and the related sciences, which were delegated in chapter V to the vocational teacher in Ontario, must have two years or more of training in approved courses. In New York, Ohio, Michigan and Texas, the minimum standard is now set at college graduation. It will be seen in table 17 that the curricula approved for teacher training in these states, include approximately the following credits: agricultural subjects 40 per cent, related sciences 20 to 30 per cent, humanistic subjects, including pure science, 20 per cent, professional studies 10 to 15 per cent. Provision is made for electives. These cater to individual tastes of the teachers and to the various needs of different sections of the state.

To obtain the Intermediate Certificate in Agriculture in Ontario, the secondary school teacher, previously trained in pure sciences, humanistic subjects and pedagogy, is required to devote ten weeks to the study of agricultural subjects and related sciences. This is approximately one fifth of the time devoted to agricultural subjects alone and one eighth of that to agriculture and related sciences in the three states named above. The University Specialist who seeks the Specialist's Certificate in Agriculture must spend eighteen weeks in the study of agriculture and related sciences. Even this is but one fourth of the requirement in New York. Such secondary school teachers would therefore seem better fitted to teach the related sciences and other school subjects than farm practice of the vocational course.

To determine whether graduation from the Ontario Agricultural College assured one adequate preparation in agriculture and related sciences, table 19 was prepared, showing the total number of lectures

	First and Second Years Obligatory		Third and Fourth Year Options																	
			Agronomy		Animal Husbandry		Apiculture		Bacteriology		Botany		Chemistry		Dairying		Entomology		Horticulture	
	Lec.	Lab.	Lec.	Lab.	Lec.	Lab.	Lec.	Lab.	Lec.	Lab.	Lec.	Lab.	Lec.	Lab.	Lec	Lab.	Lec.	Lab.	Lec.	Lab
Bacteriology	48	24	...	...	...	...	30	30	456	345	93	...	24	48	180	108	27	30	12	...
Botany	108	108	54	57	...	30	27	84	54	108	333	405	...	...	...	...	93	186	96	186
Chemistry	177	123	132	138	132	138	114	54	138	54	54	24	516	411	186	186	54	24	146	24
English	162	...	108	57	108	57	108	57	108	57	108	57	108	57	108	57	108	57	108	57
Entomology and Zoology	120	108	8	...	8	...	165	153	39	54	207	162	...	...	...	...	528	351	15	54
Mathematics	27	...	...	...	...	...	...	...	...	...	...	...	54	54	...	...	...	...	...	...
Physics	108	84	24	36	24	36	...	...	...	...	...	...	108	78	30	...	...	...	54	36
Climatology	...	...	15	...	...	...	15	...	...	...	15	...	...	...	...	...	15	...	15	...
Animal Husbandry	30	60	216	186	231	186	...	...	...	...	...	...	...	...	75	60	...	...	...	...
Apiculture	30	...	...	...	...	...	335	270	...	...	...	...	...	...	...	...	...	...	...	...
Dairy Husbandry	24	24	...	...	...	...	...	...	...	...	...	...	...	...	285	237	...	...	...	...
Farm Mechanics	...	78	60	...	60	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Field Husbandry	24	24	177	84	177	84	...	...	...	...	...	...	...	...	108	...	...	...	...	...
Horticulture	84	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	391	261
Poultry	30	...	97	70	97	70	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Economics	54	...	216	20	189	20	108	...	108	...	108	...	108	...	108	...	108	...	189	...
Veterinary Science	...	...	...	...	54	27	...	...	...	...	...	...	...	...	...	...	...	...	...	...
French or German	...	...	...	...	...	...	162	...	162	...	162	...	162	...	...	...	147	...	...	...
Genetics	54	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	54	30
Parasitology	...	...	...	...	...	...	...	...	15	30	...	...	...	...	...	...	...	...	...	...

Table 19—showing the numbers of lectures and "labs" in various courses in agriculture at the Ontario Agricultural College, Guelph. Fall term of 12 weeks and winter term of 15 weeks duration. Lectures are 50-minute, and "labs" 75-minute periods. Data from O.A.C. Calendar 1922-23. (The Agricultural Engineering option of that year has been abandoned.)

Options	*Agriculture* including: Animal Husbandry, Apiculture, Dairy Husbandry, Farm Mechanics, Field Husbandry, Horticulture, Poultry, *Economics, Veterinary Science	*Sciences* including: Bacteriology, Botany, Chemistry, Entomology, Zoology, Physics, Climatology, Genetics, Parasitology	English, Mathematics, French, German
	Per cent.	Per cent.	Per cent.
Agronomy	46	44	10
Animal husbandry	48	41	10
Apiculture	35	50	15
Bacteriology	17	68	15
Botany	17	68	15
Chemistry	17	65	18
Dairy Husbandry	39	51	10
Entomology	17	69	14
Horticulture	38	52	10

Table 20 showing allotment of class periods to the various groups of subjects in the different options at the Ontario Agricultural College. In this table lecture and "lab" are considered of equal value. Prepared from table 19 above.

*Including Political Economy.

and practicums required of a student in each of the nine options now offered. Table 20 shows the percentages of class periods devoted to agriculture, related sciences and other subjects in each of the nine options, which lead to the degree of B.S.A. Each of these tables reveals the fact that the curricula which lead to a degree are highly specialized. The majority of these curricula are apparently designed to produce specialists rather than practical farmers. The organization is the outcome of a demand for men highly proficient in certain technical branches. In keeping with this policy of the Agricultural College, provision should be made to train teachers for maximum efficiency in this new field of vocational agricultural education.

The vocational school of agriculture exists in order that the best farm practices may be taught. The sciences develop an intelligent understanding of these practices. Table 17 shows that in certain

states at least, greater prominence is given to practical agriculture than to the related sciences of the teacher-training course. This is in conformity with the relative importance of the two groups of subjects in the vocational school. In table 20 we find that, on this ground, the options in Bacteriology, Botany, Chemistry and Entomology are ill adapted to vocational teacher-training. In a province which produces field crops and dairy, animal and poultry products to the values shown in diagram 4, a course of four years in agriculture which includes only thirty lectures and sixty practicums on animal husbandry, including feeds and feeding, twenty-four lectures and twenty-four "labs" in agronomy and thirty lectures on poultry, can scarcely be regarded as suitable for preparing teachers of vocational agriculture. In the apiculture option the amount of time devoted to a study of bees is out of proportion to that which the teacher of vocational agriculture would be called upon to devote to it. In this option the important branches of agriculture in Ontario receive no greater attention than in the options eliminated above. Hence we may disregard it. While the Dairy Husbandry curriculum appears to approach more nearly the desirable standard for teacher-training, yet, even for a dairy section, it seems advisable that less time should be devoted to the manufacturing end of dairying and more to the types of farming which accompany the industry. In his dairy farm survey in Oxford County in 1918-1919, Professor Leitch showed that the average man should not specialize in dairying to a degree greater than that which will enable him to receive 70 per cent of his gross revenue from the dairy herd.[1] The successful farmer was "two-thirds dairyman and one-third mixed farmer."[2] The side lines named in his report are cash crops, hogs, colts and poultry. The Dairy Option is therefore better adapted to produce the dairy expert than the teacher of vocational agriculture in a dairy district. While the Horticulture Option may prepare the teacher for teaching fruit growing and market gardening, it does not offer the training desirable for teaching the other types of farming carried on within the secondary school district. In chapter III, we saw that such school districts will have radii of four or five miles. It is improbable that within Ontario a farming district of such

[1]Ontario Agricultural College, Bulletin No. 275, page 4.
[2]Ontario Agricultural College, Bulletin No. 275, page 14.

radius can be found within which horticulture alone is carried on. Poultry husbandry, farm mechanics, etc., assume importance in the vocational teacher's curriculum. In the curriculum in agronomy and animal husbandry, one finds nearly all the desirable features of the agricultural course for teacher training.[1]

It would seem desirable to incorporate in the teacher-training curriculum courses in both climatology and veterinary science. For teachers in the fruit and market garden district, further work in horticulture should be offered. A small reduction in the requirements in chemistry of both options, in botany and in economics of the agronomy curriculum and in animal studies or in related sciences in the animal husbandry option, would provide time for climatology and veterinary science, and leave some opportunity for electives. This arrangement would provide teachers qualified for the special crop areas of Ontario. A comparison of tables 20 and 17 shows that in the options in general agriculture at the Ontario Agricultural College, the requirements in related sciences are considerably greater than those in the teacher-training curricula for New York and Texas. The foregoing revision of the options in general agriculture would seem to meet the needs of the vocational teacher in the dairy and mixed farming districts. Moreover, it would provide teachers for the special crop areas.

We have seen in table 16 that in American Colleges professional training is incorporated in the undergraduate curriculum. In Ontario, on the other hand, a year for professional training is set apart after the close of the academic course. In accordance with this well-established policy, one year of professional training should be required of teachers of vocational agriculture.

In keeping with the principle of specific training, the work in education should be limited to the preparation of teachers for the specific duties which will subsequently devolve upon them. In Massachusetts the teacher of vocational agriculture "is not permitted to teach non-vocational subjects, nor to perform any other

[1]It is worthy of note that these curricula in general agriculture resemble somewhat the earlier agriculture option which produced the vast majority of the agricultural representatives of the province. The work of these men as teachers is evidence of the worth of such standards for vocational teacher-training.

non-agricultural school work."[1] In New York State teachers of agriculture may function as principals "but give no instruction in subjects other than agriculture."[2] Such restrictions guard against encroachments of academic school duties upon the time of the vocational teacher. In the smaller secondary schools of Ontario, where first and second year classes in agriculture combine in courses given in alternate years, as in Massachusetts, New York and elsewhere, the vocational teacher will have half of each day free to teach the sciences and attend to his duties as principal. To safeguard his time for project supervision, he should not be permitted to supervise the teaching of the academic subjects. As in New York State, this work should be delegated to the assistant principal, who will have charge of the school during the absence of the principal in the discharge of his extra-school duties.

With the above limitations of duties for the teacher of agriculture, it may be said that the professional course should fit him for the office of principal and for teaching vocational agriculture on the project basis, and the sciences of the high school programme of studies. Such a curriculum would include Educational Psychology, the Principles of Teaching, Special Methods in the sciences, Project Teaching in Agriculture and School Organization and Management, from the standpoints of both the departmental teacher and the principal. Provision would necessarily be made for observation work and practice-teaching.

In discussing "the problem of providing more satisfactory means for the vocational training of teachers", Dr. F. W. Merchant, General Director of Education for Ontario, says, "Either a special department should be added to one of our present professional training schools, or an independent college for the purpose should be established."[3] The recent trend has been in the direction of an independent college.[4] Since agricultural education is but one form of vocational education, it is reasonable to expect that provision for teacher-training in this field will be equal to that for the training of

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[1]See Massachusetts Board of Education, Bulletin 1916, No. 23, page 13.

[2]Eaton, T. H., Vocational Education Rural School Survey of New York State, page 101.

[3]See Minister of Education, Ontario, Report, 1921, page 26.

[4]See Minister of Education, Report, 1922, page 18.

teachers for technical schools in urban centres. In each of Massachusetts, Michigan, New York, Ohio, Texas, Wisconsin and other States, the State Agricultural College is designated the teacher-training institution. In Texas and Wisconsin state normal schools are also charged with this work.[1] These schools, of course, offer curricula leading to a degree in agriculture and education combined. The establishment of a department of education in the Ontario Agricultural College would necessitate a duplication of lectures in psychology and certain other subjects now given in the College of Education. By this means, however, the work could be better adapted to suit the specific needs of this particular group of teachers, who would be kept in contact with the agricultural college for an extra year. The best results could be obtained only by a staff trained in agricultural education and in sympathy with the movement. That great body of work relating to special methods in agriculture and project study and the observation and practice-teaching in agriculture would demand separate treatment. It is highly probable that the most effective results would be obtained by organizing a separate department in the Provincial Agricultural College for this work. In the New York State College of Agriculture, such a department was established a few years ago. The staff of this department are employed by the State Department of Education. Yet they are members of the Agricultural College Faculty, attend faculty meetings, and have a voice in moulding the teacher-training courses of the college. Such an organization for Ontario, whether the department of education at Guelph were housed in an agricultural college building or in a building provided by the Education Department and set apart, would provide a means of mediation and understanding between the Provincial Departments of Agriculture and Education in matters pertaining to vocational education in agriculture. By this means the Department of Education would have its representatives present at faculty meetings, guarding its interests. The Department of Agriculture, and its representatives on the college staff, would find effective expression for much that they have to offer in the cause of educational advancement.

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[1]See respective State Plans.

CHAPTER IX.

ADMINISTRATION AND SUPERVISION.

AN examination of the preceding chapters shows that in Ontario dual organization exists for promoting agricultural education. On the one hand the Department of Education directs academic, liberalizing courses in agriculture in secondary schools. An attempt has been made to encourage vocational education by establishing departments of agriculture in these schools. The Department of Agriculture, on the other hand, is promoting vocational instruction through the offices of its County Representatives and through the School and the College of Agriculture.

Should the Department of Agriculture continue to control vocational agricultural education, or should this work be delegated to the Department of Education? In our search for an answer to this important question, let us examine conditions in both the United States and Canada. Table 21 shows that under the Smith-Hughes Act the vast majority of the states have organized their schools and departments of vocational agriculture under the State Board of Education. In Colorado only was the authority placed with the State Board of Agriculture. This Board was authorized to act only "until the constitution of the state was amended so as to provide for an appointive Board of Education."[1] Indeed it is maintained

Board	Number of States
State Board of Education	31
Special Board created	13
State High School Board	1
State Board of Industrial Education	1
State Board for Vocational Education	1
State Board for Agriculture	1

Table 21, showing Boards administering Vocational Agricultural Education in U.S. Data from Federal Board for Vocational Education, Annual Report 1918, pages 151 to 158, Annual Report 1920, pages 87 to 198.

[1]Federal Board for Vocational Education, Annual Report, 1918, page 151.

that the Smith-Hughes Act has stimulated the creation of State Boards of Education in a number of States of the Union.

In Alberta the Department of Agriculture is charged with the responsibility of administering Federal grants in aid of vocational agricultural education. This organization has resulted in the establishment of a system of provincial schools of agriculture. Through unfortunate financial conditions in that province, the attendance in recent years has so decreased that several of these schools have been obliged to suspend their services, at a time when the farmers are in great need of the best assistance that expert direction can offer. Yet it would seem that only by erecting these buildings could the Department of Agriculture provide permanent school facilities for the work.

In Ontario, as we have seen, the Provincial Departments of Agriculture and Education parted company when the Agricultural Representatives carried their short courses away from the secondary schools and the Education Department withdrew from the work its financial support. To-day the Department of Agriculture has in its service men adequately trained in the technical branches of agriculture to take up the work. It is provided with facilities for training teachers in the science of agriculture. It lacks a school for professional training of teachers. It is reaching but a small percentage of the farm boys.[1] Instead of having vocational school accommodation to satisfy the requirements of the Adolescent School Attendance Act for rural parts, it is under the necessity of arranging the winter schools and short courses in such buildings as a consolidated school, a township hall, a church hall, a town hall, armouries and an abandoned high school building.[2] We have seen the futility of attempting to duplicate, by special schools of agriculture, our present secondary school system in rural Ontario.[3] Were departments of vocational agriculture in secondary schools established under control of the Department of Agriculture while the Department of Education directed the academic classes, each school

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[1]See diagram VI.

[2]Data supplied by Agricultural Representatives in reply to enquiry.

[3]See Chapter III.

would become a potential, if not an active, centre of community unrest, and of disruption between the central departments concerned.

The Department of Education, on the other hand, provided with educational machinery highly organized, rapidly expanding[1] and in smooth working order, has many decades of experience in directing academic education. It has administered creditably all phases of vocational education except that of agriculture. In this field, unfortunately, its attempts have involved the employment of teachers primarily academic and with a modicum of training in agricultural subjects. These teachers have a heavy daily programme of academic subjects. For them farm experience is not essential.[2] The work is not on the project basis. It does not necessitate practice in carrying important agricultural enterprises to a financially successful conclusion. Within the Education Department, a "Director of Technical Education" with a staff of assistants, promotes vocational education within urban centres. The activities in Agricultural Education which emanate from this Department are under the direction of an "Inspector of Elementary Agricultural Education". The academic work in elementary and secondary schools, and the training of teachers for these classes, command so large a share of his attention that little opportunity can be afforded him to develop vocational work in secondary school departments of agriculture.

It was the hope of the late Dr. John Seath, Superintendent of Education for Ontario, that ultimately we should "have established successful classes in agriculture and horticulture in our Public, High and Continuation Schools, with, eventually, separate Agricultural High Schools."[3] In the same report, issued in 1911, he further states that "if we miss the present opportunity of taking a further step in the development of an efficient system of agricultural education, it will be exceedingly difficult to rectify our blunder in the near future." Duplication of effort by the Provincial Departments of Education and Agriculture, is striking evidence that the undesirable is culminating.

The conclusion to be drawn in this matter is that the Department of Education should provide an office within its walls fully equipped,

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[1]See diagram VII.

[2]See Chapter VIII.

[3]Seath, J., Education for Industrial Purposes, page 320.

manned and authorized to pursue with vigour, a policy and plan of vocational education in agriculture comparable with that which it has developed in the technical and commercial branches. In establishing this office, care should be exercised to secure for it, as far as possible, the earnest co-operation of the Department of Agriculture. By this means, all vocational work in education within the province would pass ultimately under the direction of the Department of Education, which alone is in position to maintain it on a permanent basis. The Department of Agriculture would render more effective service than at present because of its invaluable contribution to the success of a system vastly superior to anything which it alone can produce.

The organization of the central office may or may not involve a reorganization of the present vocational branch. In many states all vocational work is placed under a Director of Vocational Education. Supervisors of the various branches are appointed as his assistants. Such is virtually the organization in New York, Michigan, Texas, Ohio, Indiana and elsewhere.[1] By this means all vocational fields are co-ordinated and all are placed on a basis of equality. On the other hand, the establishment of a special department with a Director of Vocational Agricultural Education in charge would function equally well. It would not necessitate a reorganization of the present technical branch. It would be in conformity with the present organization within the Department of Education. For these reasons it would seem advisable that the latter organization should prevail. Such organization, together with that for teacher-training and other phases of the system suggested for vocational agricultural education within the province, is represented in diagram XXX.

Upon the Director of Vocational Agricultural Education, and his assistants, will depend very largely the success of the system. In many States the Supervisor, who holds a corresponding office, is a graduate of an agricultural college, and holds a degree in education. He is preferably a man of experience in teaching vocational agriculture. An examination of table 16 shows that his agricultural college curriculum includes such humanistic studies as will develop

[1]See the respective State Plans for Vocational Education.

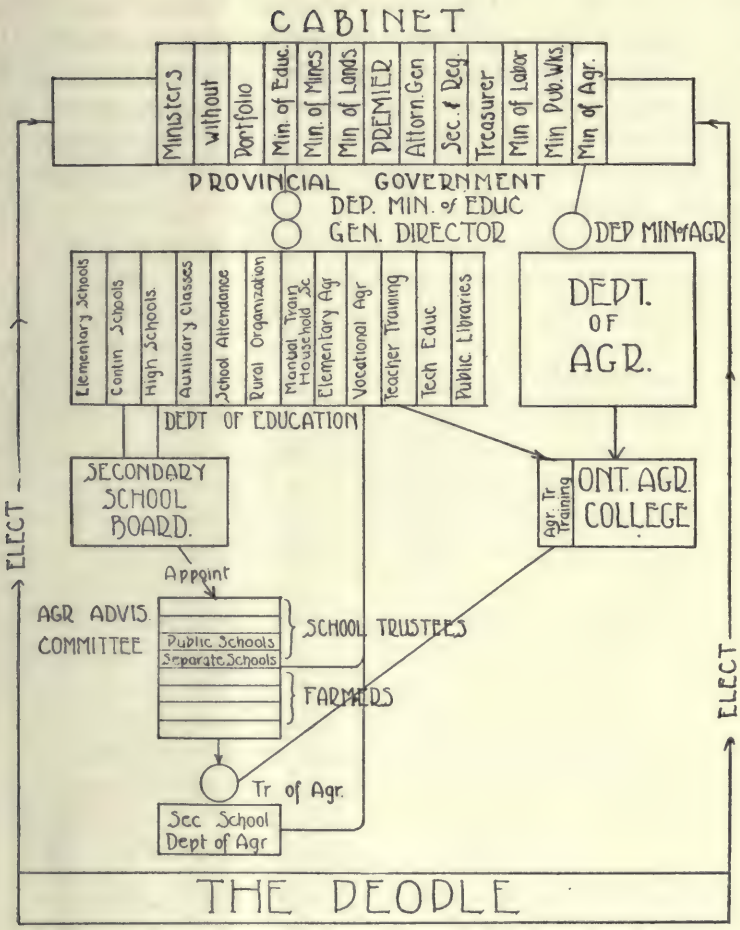

Diagram XXX, showing proposed organization within the Education Department, the Agricultural College and the local communities for administration and supervision of vocational agricultural education in Ontario.

in him a sympathy with academic education. It would seem desirable that the Director of Vocational Agricultural Education in Ontario should be a graduate of an agricultural college, hold a degree in education and have such academic training as will enlist his sympathy in all the branches of secondary school education. He should command the support of the forces within the service of the Departments of Agriculture and Education alike, co-operate with the teacher-training department in the Agricultural College, and direct the departments of vocational agricultural education in the secondary schools.

CHAPTER X.

FINANCIAL SUPPORT.

"THE rural communities for their own sakes are entitled to, and must have, education suited to the needs of all the members. Education cannot be conferred upon them; it may not be beneficially imposed upon them; it must be evolved by themselves by self-help, if need be, by some measure of self-sacrifice, with the co-operating assistance of governments."[1]

Self-help is essential to life. Its soundness in education cannot be questioned. It develops local leadership, creates a deep interest in school affairs and thereby insures value for money invested. It satisfies the wishes of the people.[2] The success attending its general acceptance from the beginning in the system of public education, both elementary and secondary, in Ontario, and its more recent application in support of vocational and technical education in urban centres, enables us to affirm the wisdom of placing upon the rural communities some measure of responsibility for the financial support of departments of vocational agriculture in secondary schools.

The principles and purposes underlying state aid for education are chiefly as follows:—

(1) For its own welfare the state must maintain throughout all its parts adequate educational standards.[3]

(2) It should tend, by assisting toward the equalization of taxation, to equalize the educational opportunities of all citizens within its borders.

(3) It should stimulate and reward local effort.[4]

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[1]Report of the Royal Commission on Industrial and Technical Training, page 286.

[2]See Journal of New York State Teachers' Association, Feb., 1921, pages 4 to 11.

[3]See Howison, "The real ground for state control of schools," Educational Review, Vol. V., page 424-433.

[4]See journal of New York Teachers' Association, Feb., 1921, and Updegraff, H., "Financial Support," Rural School Survey of New York State, Ch. 8, and pp. 117-118.

To stimulate the teaching of vocational agriculture in Ontario, the School Acts provide for an annual grant of $500 by the County Council toward the support of each department of agriculture in a secondary school in the county.[1] The grant tends to establish and maintain minimum standards in agricultural education, and equalize opportunities within the county. Since it is ungraded, however, it cannot encourage local effort beyond the maintenance of a department. It cannot reward local participation according to deserts. On the other hand the county as the intermediate unit may justly leave such encouragement and reward to the provincial authorities and, by equalizing participation and opportunities within its borders, function as a large local unit. The principle of uniform county grants to all departments of agriculture within the county appears well founded.

The balance of the financial aid must come from the local school section or municipality and from the provincial treasury. The elementary school board of any municipality or school section may, with the approval of the Minister of Education, either singly or in conjunction with one or more like boards, establish and maintain a Continuation School. Each such school is open, without fees, to the pupils of the county. The County Council must bear the cost of educating county pupils whose parents or guardians are not supporters of the Continuation School. Thus, "Ratepayers residing in the school sections or municipalities in which the secondary schools are established pay not only the full cost of educating the children who live in those school sections or municipalities but are also required to pay their share of the cost of education of the county pupils."[2] Many districts thus find it to their advantage to remain outside a secondary school section and allow the county as a whole to bear the cost of secondary education for their children. Such a condition militates against the formation of secondary school sections each with sufficient taxable property to support a strong secondary school with academic and vocational departments. Indeed it is probable that in many such sections the liberal grants at present

[1]See the Continuation School Act, section 8, subsection (4), and The High School Act, section 33, subsection (2), Revised Statutes of Ontario, 1914.

[2]See Minister of Education, Ontario, Report 1922, page 10.

offered by the Provincial Department of Education cannot stimulate that further local effort required to establish and maintain departments of vocational agriculture. The local unit must first be strengthened by a scheme not unlike that recommended in chapter III, for the creation of community school sections. The local aid thus secured should be large enough to create a deep local interest in the school, develop leadership and encourage citizens in efficient participation in the exercise of citizenship.

By the Vocational Education Act[1] provision is made for state aid toward industrial, home-making, art, technical, agricultural and commercial schools and departments in Ontario. Subject to the regulations of the Minister of Education, it provides for provincial aid to such departments. By the Regulations of the Minister, published in 1922, the annual grants thus available for departments of agriculture, in secondary schools are as follows:—

(1) For salaries of teachers:

Expenditures up to $2000 .....75%
Expenditures from $2000 to $5000.....66 2/3%
Expenditures from $5000 to $10,000.....50%
Expeditures from $10,000 to $15,000.....33 1/3%
Expenditures from $15,000 and over.....25%

(2) Equipment: fifty per cent of the cost, if for vocational purposes.

(3) Furniture: fifty per cent of the cost, if for vocational purposes.

(4) Buildings: fifty per cent of the cost, if erected for the special purpose of a day vocational school; or fifty per cent of the cost of the part of the building used solely for vocational purposes. A grant not to exceed twenty-five per cent of the cost may be made toward the erection of those parts used alike by vocational and non-vocational pupils for library, gymnasium, assembly hall, laboratory or office.[2]

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[1]See Vocational Education Act—Statutes of Ontario, 1921.

[2]ee Regulations for Vocational Schools; Ontario Department of Education, 1922, pages 39 to 41.

Here we find two distinct systems of grants, one a graduated scale based on the local expenditures for salaries of vocational teachers; the other a system of grants, on the fifty-fifty basis, for securing equipment, furniture, and buildings for vocational purposes only, with provision for lesser aid for parts of buildings used in common by vocational and non-vocational students.

Let us examine these grants in the light of the principles and purposes governing provincial aid stated in the early part of this chapter. The graded system in support of teachers' salaries is apparently designed with a view to lightening the burden of the municipality or school section with small assessment value, leaving a relatively greater share of financial responsibility on the larger, wealthier municipalities which employ a greater number of teachers. This is in conformity with the principle of equalizing educational opportunities and financial burdens. By offering aid to all municipalities and secondary school sections for vocational education it tends to foster and maintain minimum standards. The grading of grants thus seems to satisfy all the principles governing state aid for vocational education. It will be seen, however, that the scale of grants at present offered does not necessarily reward effort equitably or distribute aid according to the deserts and needs of the various sections. Two sections, one with extensive, and the other with limited, taxable property, may have need for equal expenditures on the salaries of teachers of vocational subjects. The former will have a low, while the latter will have an exceedingly high, rate of taxation. The first section makes very little effort while the second may bear a heavy burden; yet the grants at present offered would reward both equally. The development of departments of vocational agriculture in Ontario secondary schools is certain to create many examples of such situations. The principle of a sliding scale of grants is valid, but the application in this case may be faulty.

In an effort to arrive at an equitable scheme of distributing state aid to elementary and secondary schools of New York State, Professor Updegraff devised the following formula:—"(240-V) MxTx$1" in which "240 is the number of thousands of dollars in the Maximum Equalized Valuation Standard" (obtained by dividing the total equalized valuation of the state by the number of teachers in the state). "V represents the number of thousands of dollars

in the equalized valuation per teacher of the district in question. M represents the number of mills (expressed as a whole number) in the equalized tax for school expenses (not including tax for capital outlays, or new buildings, etc.) of the district in question. T represents the number of full time teachers (including all instruction officers) in the district in question."[1] A further grant is recommended for each school of the state based upon the true valuation of the district and on the tax rate levied.[2] A close examination of this system shows that school districts with taxable wealth per teacher below the average for the state are assisted in proportion to the shortcomings of their equalized assessment, the average assessment per teacher in the state, the tax rate which they levy upon themselves, and the number of teachers employed by the section. In addition to meeting the other requirements of the principles governing state aid for weaker sections, it places greatest aid where it is most needed, provided that the local authorities, by their own efforts, prove that they are worthy of this aid. To encourage and reward the more prosperous districts, Professor Updegraff proposes other scales of grants based on true valuations and tax-rate for those above the average in taxable wealth. "It is good administrative policy for a state to give every district something."[3]

It would seem desirable that an effort be made to develop, from conditions in Ontario, a similar formula for applying equitably the principles underlying financial aid for all phases of vocational education. The problem, however, is so comprehensive that a solution of it cannot be attempted within the limits of this work. It can be only indicated. It is possible that a division of the counties of Ontario into secondary school districts would be necessary before data for the province as a whole could be secured.

While it is generally conceded that in all phases of educational endeavour efficiency of the teaching force is the most potent single factor in creating an environment abounding in stimuli designed to promote desirable educational reactions on the part of the students,

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[1]Updegraff, H., Financial Support, Rural School Survey of New York State, p. 141.

[2]Updegraff, H., Financial Support, p. 142.

[3]Updegraff, H., Financial Support, pp. 142-152.

yet without buildings, furniture and equipment adapted to his needs the teacher cannot secure effective results. It may be stated, therefore, that while liberal grants in support of the teaching service should take precedence over all other forms of aid, yet a fair proportion of the state funds may be devoted very well to promoting improved accommodation and equipment. In encouraging better facilities for vocational education within the municipalities and school sections, the Ontario Department of Education administers state funds for worthy purposes.

When we examine the basis for allotting these provincial grants to the municipalities and sections, however, we find that it deviates rather widely from the principles governing state aid that were laid down earlier in this chapter. These grants do not appear to be well devised for stimulating local effort. Government grants, like stimulants to individuals, to be effective must be graded in amount to the needs of each particular case. A grant of fifty per cent toward the cost of buildings, furniture and equipment may be inadequate to arouse a poor, small, highly taxed district to undertake further financial obligations in order to promote vocational education. In these cases minimum standards are not established. Such districts could undoubtedly be found in parts of Ontario at present. True leadership may be the first stmulus required in such cases. On the other hand, a large, wealthy section needs less to call forth worthy effort. A grant of fifty per cent toward the cost of material conditions for vocational education in such a case may be somewhat demoralizing. Wealthy buyers find here an opportunity to purchase through provincial aid, at half their market value, vast quantities of goods essential to their business. There is also danger that pretexts may be found whereby they secure accommodation more lavish than conditions demand. Nor do these grants equitably reward local effort. Regardless of the tax-rate imposed for the cause of vocational education, this system rewards each municipality or section only according to the amount of money raised by taxation. Hence this system of grants does not tend to equalize financial burdens. It does not effectively stimulate local effort, nor tend to equalize taxation, and, therefore, its effects in equalizing opportunities in vocational education are of minor value. The enlarged local unit should perform the function of equalizing taxation over a

larger area, and the state should aid very liberally when necessity requires it. It should encourage and reward all according to deserts.

On what basis should such grants be disbursed? The objections to the present scheme of provincial aid toward the construction of school buildings for vocational education in Ontario necessitates a search for a better scheme of apportionment. An examination of the Report of the Minister of Education for 1922 shows that the large items in secondary school maintenance consist in the salaries of teachers and the cost of fuel and janitors' services. It is highly probable that, other things being equal, the cost of school maintenance is approximately proportional to the number of teachers employed. The cost of school buildings, on the other hand, is not proportional to the number of class rooms. The cost of large schools is much less per class room than is that of smaller schools. It is evident therefore, that a formula similar to that devised by Professor Updegraff for distributing aid for school support will not meet the requirements for equitable distribution of state aid toward buildings. The cost of school buildings will fall heavily on those sections with sparse population and small assessment values. Such localities must provide, by high taxation, schools with only a few class rooms which are relatively expensive. Because the classes in these schools, as shown in table 15, are frequently small, the cost per capita is further increased. The municipalities of high taxable wealth and large school population, on the other hand ,erect large buildings at comparatively low cost per class room. The classes are larger and the cost per capita, therefore, very much less than in the case of those sections less favourably situated. To equalize educational opportunities and taxation burdens, therefore, it would seem desirable that a scheme be devised that would take into account both the equalized assessment values and the number of classes required. The grants should be inversely proportional to the equalized valuations of the sections or municipalities and should be larger per capita for the district of small, than for that of large, school population. In order that such schools or departments may not be established unnecessarily, locations and plans of schools and departments of vocational agriculture, should be subject, as at present, to Departmental approval.

With paucity of data it is useless to attempt a solution of the problem here. It is evident, however, that differences in assessment values constitute a more important factor than does variation in school population in creating need for equalizing taxation burdens by state aid for buildings. Moreover, it is probable that a fairly high correlation exists between the assessment values and the populations of secondary school districts. Until a fairer scheme is contrived it would seem advisable, therefore, that the provincial grants in aid of school buildings for agricultural education should be graded so as to favour those sections of low equalized assessment values. Instead of paying 50 per cent of the cost of vocational school buildings from funds of the provincial treasury the Government of the Province might well consider a maximum grant of 75 per cent or more toward the cost of such buildings for the poorer districts and a graded diminution to 25 per cent or less of such costs for municipalities or sections with true valuations above the average for the secondary school districts of the province as a whole. These grants would seem to be in accord with the principles stated earlier in this chapter.

State aid toward the building of teacherages might be justly allotted on the same basis as aid for school buildings. Because conveyance of students of agriculture to and from school would reduce the number of departments required, and strengthen those in existence, it is probable that aid for such transportation should be placed under the same catagory. Necessary expenditures for furniture and equipment for departments of agriculture in secondary schools are not large. The distribution of state grants for these on the same basis as for buildings would not affect seriously either the wealthier municipalities or the provincial treasury.

There is little evidence at hand to indicate what proportion of the funds for the support of a department of vocational agriculture in a secondary school should be provided by each of the local school sections, the county and the state. In no case have exact standards been determined by scientific method. Table 22 shows approximately the relative expenditures in 1922 in certain states of the American Union for salaries of teachers and supervisors of classes in vocational agriculture. It will be seen that the variation is great. In other states, where graded systems are employed, the records do

not indicate the basis of allotment. It is evident that, in the United States, no uniformity has yet been arrived at. It is improbable that a general principle applicable to all states can be established. Both the state funds available and the needs and resources of the various local sections or municipalities vary so widely that the ratio must be determined by the circumstances within such state or province, and modified from time to time to meet the changing conditions of a dynamic society. It may, perhaps, be said that state aid should be sufficiently liberal to awaken the poorest locality to effort, and not only satisfy the wealthy municipalities but stimulate them to provide superior educational facilities for the student body.

STATE	AID		
	Federal	State	Local
Arizona	1	Balance	0
California	1	1	Balance
Connecticut	1	1	0
Florida (approx.)	1	1	1
Idaho	1	1	Balance
Kentucky	1	0	Balance
Maryland	1	0	1
Michigan (approx.)	2	1	4
Missouri	1	1	1
Nevada	2	1	1
New Hampshire	1	0	Balance
New Jersey	2	1	1
North Carolina	2	1	1
Oklahoma	1	0	1
Pennsylvania (approx.)	2	1	1
South Carolina (approx.)	2	1	1
South Dakota	1	1	2
Utah	1	0	Balance
Vermont	1	1	0
Virginia	1	Balance	0
Wisconsin	1	0	1

Table 22, showing the approximate relative expenditures of Federal, State and local monies for vocational agricultural education within certain states. (Prepared from Annual Report of Federal Board for Vocational Education, 1922, pp. 298-301.)

Many reasons may be advanced to show the necessity for *Federal aid* for vocational education in agriculture.[1] Development of new territory necessitates a shifting of population. Youth educated at the expense of a province render their life services elsewhere. The problem of vocational education in agriculture is, therefore, national in scope. In educational affairs provinces, like municipalities, profit by stimulation and reward of effort. Like municipalities, they may require assistance toward equalization of educational burdens. The financial success of Canada depends on the prosperity of her industries. Chief among these is the great basic industry of agriculture. It is probable that no one factor within the Dominion can more strongly militate against economic progress than that of crop failure; nor can any other equal vast agricultural production in stimulating urban industry in its varied forms. The great system of Canadian National Railways is dependent for its success very largely upon increased agricultural production. It would appear, therefore, to be in the interests of both Canadian and Provincial Governments that Federal aid should be made available for vocational education in agriculture at all times, and more particularly at a period when adverse economic conditions render necessary for the success of the farmer a thorough and extensive application of both scientific and business principles to all the operations of the farm.

With certain reservations, however, more particularly those respecting military training and the rights and privileges relating to denominational schools, the British North America Act leaves to the provinces complete control of education.[2] The rights of the provinces are jealously guarded.[3] Without a revision of the British North America Act, it is impossible for the Dominion Government to assume a large measure of control in education. Under present conditions the Federal and provincial governments can co-operate only by mutual agreement.[4] Yet, through the researches and publications of the many branches of the Federal Service, educational influences of vast importance are wielded. In Canada, as in the

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[1]See Report of the Commission on National Aid to Vocational Education, Vol. 1, United States Federal Board for Vocational Education.

[2]See Bourinot, J. G., "How Canada is Governed."

[3]See Sandiford, P., Comparative Education, page 349.

[4]See The Technical Education Act, Sec. 6 (8).

United States, the Federal Government has seen fit to grant financial aid on behalf of vocational education within the provinces. In 1913 the Agricultural Instruction Act was passed "for the purpose of aiding and advancing the farming industry by instruction in agriculture."[1] Again in 1920 the Technical Education Act was passed whereby equivalent grants were set apart to "promote industry and mechanical trades, and to increase the earning capacity, efficiency and productive power of those employed therein."[2] In appendix H are stated the annual grants paid by the Canadian and United States Federal Governments in support of vocational education.

The Agricultural Instruction Act provided for Federal appropriations in aid of agricultural education within the provinces for a period of ten years. In January, 1924, representatives of various provinces waited upon the Prime Minister of Canada in an endeavour to secure a continuance of this aid, but without avail. Although the mass of scientific data available for the farmer was never before so great, nor his need of intelligent understanding of the best practices in crop culture, soil cultivation and drainage, plant diseases, the business of farm management, etc., so intense as at present, the Agricultural Instruction Act has expired and Federal grants in support of such education have ceased.

It is reasonable to enquire whether value has been received for the moneys thus far expended, and whether the Act itself was in all respects best suited to meet the needs of the future. Has the money in all cases been expended so as to advance, as far as possible, the farming industry by instruction in agriculture? An examination of annual reports on the Act reveals a surprisingly large number of activities in which grants for agricultural education affected directly not the farmer nor the farmer-to-be but others associated only remotely with the farm. Among these are (1) college professors who prepared experts for judging field crops or live stock, for teaching and for inspecting schools; (2) teachers in rural or urban schools who taught academic courses in agriculture to both boys and girls ten years of age and over, many of whom by reason of position or sex, can never operate a farm, and many of whom

[1]See The Agricultural Gazette, Canada 1914, pages 29 to 38.

[2]See The Technical Education Act, Statutes of Canada, 1920.

have never lived on a farm; (3) inspectors who supervised the teaching of agriculture in these schools. There has been a tendency to devote too large a share of the grants to imparting agricultural instruction to men and women who have chosen occupations other than that of farming, and too little to the vocational education of the boy who has decided to farm. Vast sums were expended for agricultural college buildings; yet we have seen that, in Ontario at least, it is the primary function of the agricultural college, affiliated with a provincial university, to train experts in the various branches of agricultural science rather than skilled and practical farmers.[1] As in the case of other non-denominational colleges affiliated with the university, funds for additional buildings should have come from provincial, rather than from Federal grants. Heavy expenditures were involved in building and equipping schools of agriculture for the education of youth who intended to farm. The attendance and the cost per capita for the students in attendance thereat have been such as to render inadvisable, for the present at least, the development of a system of such schools in Ontario.

The Act states that "great and permanent value will result through education, instruction and demonstration carried on along lines well devised and of a continuous nature." Much of the work carried on was planned and conducted specially for the aid of the young farmer; yet, in view of the many indirect and ineffectual methods adopted to "improve agricultural practices," it can scarcely be maintained that all of the education, instruction and demonstration were carried on along lines well devised.

A perusal of the reports on the Act, in the light of fairly extensive experience gained through contact with the activities in Ontario promoted by Federal aid, recall to the writer comparatively little education, instruction and demonstration "of a continuous nature", which can be considered truly vocational. Rather, the activities seem to have consisted in such ventures as a lecture here, a demonstration there, an agricultural short course of a week's or a month's duration, conducted but once during the decade at the same centre, and short courses at summer schools of agriculture for elementary and secondary school teachers at government expense,

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[1]See Chapters III and VIII.

whether they later teach agriculture or not. Instead of continuous instruction of individual farmers-to-be, there appear to have been a continuous, but heterogeneous, aggregation of fragmentary strivings toward a multiplicity of ends, many of which seem to have been not clearly defined and but remotely connected with improvement of agricultural practices. Yet there is probably no branch of endeavour in the list which cannot be shown to have had some beneficial results. The payment from Federal funds of the travelling and living expenses of winners of acre-profit and live stock competitions and of school inspectors and others at the Ontario Agricultural College has undoubtedly brought some return. Many activities listed, however, may be associated more fittingly with personal or local, than with Federal or even provincial aid. Records indicate that, in general, methods of expenditure in other provinces were not superior to those employed in Ontario for improving agricultural practices.

The Act made provision whereby Federal officers might be appointed to insure expenditure of the moneys "in accordance with the intentions of the Act and of the agreements and regulations made under the authority of the Act". The latitude allowed the provinces in the expenditure of the funds gave rise to such a variety of endeavours that it is not easy to understand how Federal agents could determine the worthiness of the various undertakings.

The Act contained no clause requiring provinces to provide sums of money at least equal to the Federal grants in order to aid certain branches of endeavour. It made provision for supplementing, rather than for stimulating and rewarding, provincial or local effort. It was framed at a time when standards and aims in the teaching of agriculture were ill defined. The work which it affected was so varied and so disconnected that there is no means of determining the influence of Federal aid thus far in improving agricultural practices in Canada.

The conclusion to be drawn is that Federal aid for agricultural instruction in the provinces of Canada should not be renewed under the Agricultural Instruction Act in its original form.

Can an Act be devised which will enable the Federal Government to administer authoritatively and effectively grants for vocational agricultural education within the provinces? We have seen

that the authority of the provincial governments is supreme in matters of such education. In a technical sense, therefore, Federal control in any degree may be impossible. In the sphere of practical affairs, however, some measure of Federal control may prove advisable. The Technical Education Act has been in effect for upward of four years. In regard to both the terms on which the funds become available to the provinces and the purposes for which they may be used it restricts quite rigidly expenditures within the provinces. Federal agents are appointed to enforce, within reasonable limits, the terms of agreement between the Canadian Minister of Labour, who administers the Act, and the respective provincial governments. While as yet data are too meagre to justify a conclusion, the writer, after certain enquiry, has gained the impression that results are fairly satisfactory. The Constitution of the United States contains no mention of education. Education is, therefore, a state or local function. Nevertheless, the Federal Government, in 1918, enforced the Smith-Hughes Act in aid of vocational education. The Supreme Court has not sanctioned its constitutionality, but the Act has operated successfully since that time with, apparently, very little dissension.

The need for Federal aid in vocational agricultural education, and the fact that such aid is now being received and effectively administered for technical and industrial education within the provinces under the Technical Education Act, seem to justify the conclusion that an Agricultural Education Act, providing Federal grants to stimulate and reward efforts in the teaching of vocational agriculture within the provinces, should receive favourable and early consideration by the Dominion Government.

What revision of the Agricultural Instruction Act would prove most effective in promoting vocational education in agriculture within the provinces? Among all nations of western civilization the school is to-day the accredited and approved medium for imparting education. In recent years it has proved its efficiency in vocational education. Courses of study, methods, books, equipment, etc., will be vastly improved in the future, but the existence of the vocational school is safely past the experimental stage. The project method of teaching vocational agriculture, as we have seen, makes use of the home farm with its equipment and opportunities for de-

veloping skills in both agricultural practices and business management, while scientific principles and intelligent understanding are injected into the work through instruction and direction by the agricultural expert in class. Unlike the present short courses and demonstrations in agriculture, the department of vocational agriculture, advocated in previous chapters for secondary schools, makes possible continuous instruction and guidance of the farmer-in-training for a period of years at an age when the establishment of effective habits and attitudes is most easily and most permanently achieved. The qualifications of teachers are standardized. Their methods are open to inspection. The courses of study are individually approved by the provincial Director. Records of project achievement are available for examination by those in authority. Through careful cost accounting, the improvement in agricultural practices can be measured in terms of dollars and cents, a legitimate goal in vocational education. The number of departments required to saturate the province is at most but a few hundred, and therefore easily inspected. By this system opportunity is placed at the disposal of practically every youth in need of vocational education in agriculture. For these reasons the new Act, like the Smith-Hughes Act of the United States, should provide that the education promoted by Federal aid "shall fit for useful employment, ... shall be of less than college grade and be designed to meet the needs of persons over fourteen years of age who have entered upon, or who are preparing to enter upon, the work of the farm or of the farm home," "that such education shall be that which is under public supervision or control", that the schools in which the work is conducted "shall provide for directed or supervised practice in agriculture . . . . . for at least six months per year . . . . . and that the teachers, supervisors or directors of agricultural subjects shall have at least the minimum qualifications determined by the Provincial Department of Education, subject to the approval of the Dominion Minister of Agriculture, who shall administer the Federal grants.[1]

The Smith-Hughes Act stipulates that funds for buildings and equipment satisfactory for carrying on the teaching of vocational

[1]Quotations from the Smith-Hughes Act, Sec. 10.

agriculture shall be provided within the State, while Federal aid shall be used for paying "the salaries of teachers, supervisors and directors of agricultural subjects."[1] The Technical Education Act, on the other hand, states that "not more than twenty-five per centum of the annual grant, payable to any province shall be applied for acquiring land, erecting, extending or improving buildings, or supplying furnishings and equipment."[2] Since the grants received by the Ontario Government under the Act are allotted to the municipalities and school sections under the Vocational Education Act which provides also for agricultural education, it would seem advisable that, in fairness to all sections of the province, this clause of the Technical Education Act should be included in the Agricultural Education Act. The remainder of the appropriation should be expended for the payment of salaries of teachers, supervisors and directors of vocational agricultural subjects and of those engaged in training teachers of vocational agriculture for the province.

Like the Smith-Hughes Act, the Technical Education Act provides that the annual Federal grant to each province shall be supplemented within the province by a sum at least equal to the grant for the purpose of promoting, by similar means, the teaching of vocational subjects.[3] This section in each case is designed with a view to stimulating and rewarding local effort. Its effectiveness in the United States is shown graphically in diagram XXXI. It will be seen that, when wisely administered, Federal aid becomes a powerful agent in arousing state and local authorities to action. It is highly probable that under the Technical and the Vocational Education Acts Federal aid for industrial education in Ontario will make possible a somewhat similar curve. Therefore, we may assert that section 5 of the Technical Education Act should be incorporated in the Agricultural Education Act. The Technical Education Act, after allowing ten thousand dollars annually to each province, allots the balance to the various provinces in proportion to their respective populations as determined at the last decennial census.[4]

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[1]See Smith-Hughes Act, Sec. 9 and 10.

[2]See the Technical Education Act, Sec. 6, subsec. c.

[3]See the Smith-Hughes Act, Sec. 9, and The Technical Education Act.

[4]See the Technical Education Act, Sec. 4, subsec. (2).

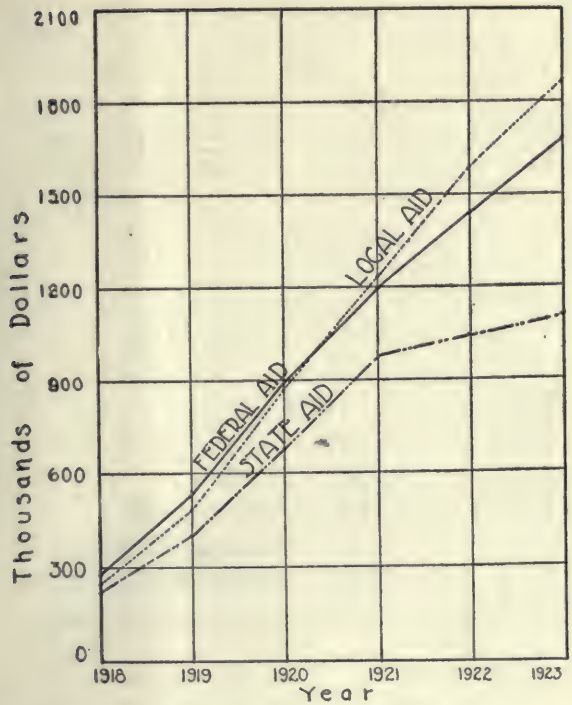

Diagram XXXI, showing how Federal aid has stimulated state and local expenditures for vocational agricultural education in the United States. (Data from Federal Board for Vocational Education, Annual Report, 1923, page 16).

Province	Rural	Urban	% rural
Prince Edward Island	69,522	19,093	78.45
Nova Scotia	296,799	227,038	56.66
New Brunswick	263,432	124,444	67.92
Quebec	1,038,630	1,322,569	43.99
Ontario	1,226,379	1,707,283	41.80
Manitoba	348,502	261,616	57.12
Saskatchewan	538,552	218,958	71.10
Alberta	365,550	222,904	62.12
British Columbia	277,020	247,562	52.81

Table 23, showing rural and urban populations of Canada by provinces. (Data from the Canada Year Book, pages 101 and 102).

Table 23 shows that the ratio between urban and rural populations varies widely from province to province. It is not easy to understand how a province with so small an urban population as that of Prince Edward Island can use to advantage so large a grant for industrial education as it receives under the Technical Education Act. By a similar clause in the Agricultural Education Act that province would receive less Federal aid than its rural population would justify. After setting apart $10,000 annually for each of the provinces, the Agricultural Education Act, like the Smith-Hughes Act,[1] therefore, should make provision whereby the Federal appropriations should be allotted to the governments of the respective provinces in proportion to the *rural* populations of the said

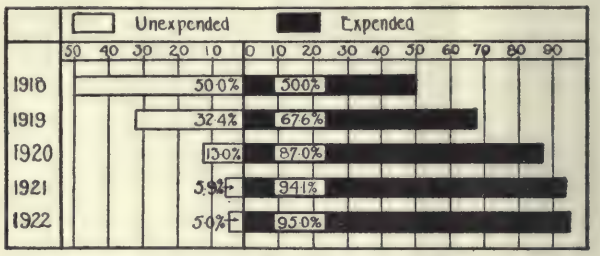

Diagram XXXII, showing percentages expended and unexpended of Federal grants for agricultural Education in the United States. (Diagram reproduced from the Annual Report of the Federal Board for Vocational Education, 1922, page 19.)

provinces respectively, as determined at the last Federal decennial census.

The Technical Education Act enables the provinces to carry forward for use in later years certain unexpended portions of the Federal grant.[2] The Smith-Hughes Act makes no such provision.[3] The funds unused revert to the Federal treasury. Diagram XXXII shows the decrease in unexpended Federal appropriations for agricultural education in the United States for the years 1918 to 1922 inclusive. This diagram, like diagram XXXI, indicates a steady and rather uniform growth in vocational agricultural education under Federal aid. Data are not available to show the effect in

[1]See the Smith-Hughes Act, Sec. 2.

[2]See The Technical Education Act, Sec. 8.

[3]See the Smith-Hughes Act, Sec. 16.

Canada of permitting provinces to expend funds carried over from earlier years. It is probable, however, that with this provision the advance in vocational education may not be so steady and uniform as it has been in the United States. It would seem advisable that the Agricultural Education Act should stipulate that all Federal appropriations unclaimed by a province during any year revert to the Federal treasury.

In fairness to the rural districts of Canada, and on behalf of the welfare of the nation, it would seem that the Federal Government should set aside and pay out of the Consolidated Revenue Fund of Canada for the purpose of stimulating and rewarding the teaching of vocational agriculture in Canada, such annual grants to the provinces respectively as are appropriated in aid of technical education. The Agricultural Education Act, embodying the terms and conditions of Federal aid, should include those clauses heretofore recommended. Other sections governing the payment of funds to the provinces, providing for annual reports to the House of Parliament and insuring expenditures in accordance with agreement and the intentions of the Act should be not unlike those laid down in the Technical Education Act.

APPENDIX A.

I. Questionnaire submitted to students of agriculture in high schools of Ontario.

Your name?..... Sex?..... Age last birthday?..... Present form in High School..... Do you live on a farm?..... Were you raised on a farm?..... Do you go home each night?..... Show by underline which you are preparing for,—Teaching, Farming, Agricultural College, University, other occupation. What is your home project?..... How far from home to the school you now attend? (Count fraction as full mile)..... How do you travel to and from school?.....

II. Questionnaire submitted to students in winter schools of agriculture.

Your name?..... Age last birthday?.....Show by underline your standing when you left school. Sr. 2, Jr. 3, Sr. 3, Jr. 4, Sr. 4, Passed H.S. Entrance examination, High School Form I, Form II, Form III, Form IV, Passed Junior Matriculation or Normal School Entrance, Passed Sr. Matriculation or First Class examinations. Your age when you left school..... Do you live on a farm?..... Were you raised on a farm?..... Have you kept cost account records for crop production?..... for animal production?..... Have you kept milk records for individual dairy cows?..... or cost records for same?..... How far do you live from the Agricultural School? (Count fraction as full mile)..... Do you go home each night?..... How do you travel back and forth between home and school?..... Is an automobile a part of the farm equipment at your home?..... What occupation do you intend to follow?.....

III. Questionnaire submitted to girls in winter schools of Household Science.

Your name?..... Age last birthday?..... Show by underline your standing when you left school. Sr. 2, Jr. 3, Sr. 3, Jr. 4, Sr. 4, Passed H.S. Entrance examinations, High School Form I, Form II, Form III, Form IV, Passed Jr. Matriculation, Normal School Entrance, Sr. Matriculation, First Class examinations. Your age on leaving school?..... Do you live on a farm?..... Were you raised on a farm?..... How far do you live from the Winter School of Household Science? (Count fraction as full mile)..... Do you go home each night?.....How do you travel back and forth between home and school?..... Is an automobile a part of the farm equipment at your home?.....

APPENDIX B.

Ages of Students
(Last birthday)

Ages of students (Last birthday).

	Girls											Total	Boys											Tota
	11	12	13	14	15	16	17	18	19	20	21 +		11	12	13	14	15	16	17	18	19	20	21 +	
Almont	..	2	5	13	14	6	2	1	..	..	..	43	..	..	5	14	9	8	..	..	..	..	..	63
Athens	..	1	3	12	10	4	1	3	..	..	..	34	..	..	2	3	3	2	2	1	1	..	..	14
Beamsville	..	3	6	17	10	18	12	7	..	3	..	76	..	2	10	15	9	13	7	4	..	2	..	62
Belleville	..	..	...	...	...	1	1	..	..	..	..	2	..	1	7	12	13	8	2	..	..	..	..	43
Brockville	..	1	3	14	12	2	9	1	1	..	..	43	..	..	...	...	2	...	..	..	..	..	..	2
Bowmanville	..	1	5	15	25	10	7	5	..	..	..	68	1	..	1	14	20	5	1	..	..	..	..	42
Clinton	..	1	...	2	4	1	..	..	..	..	..	8	..	..	9	15	9	5	..	..	..	..	..	38
Cobourg	..	..	...	...	1	...	..	..	..	..	..	1	..	..	1	9	9	2	3	..	..	..	..	24
Drayton	..	1	3	6	5	9	2	1	2	..	..	29	1	2	3	2	8	6	2	1	..	..	..	25
Essex	..	..	1	3	11	4	7	3	..	..	..	29	..	..	...	1	3	2	3	..	..	..	..	9
Haileybury	..	..	3	14	9	3	..	..	..	..	..	29	1	..	..	..	1	...	..	..	..	..	..	2
Kincardine	..	2	7	15	14	...	..	..	..	..	..	38	..	1	5	8	4	...	..	..	..	..	..	18
Mallorytown	..	1	1	2	1	...	..	2	..	..	..	7	..	1	...	2	1	2	1	..	..	..	..	7
Mitchell	..	..	2	12	6	3	..	..	..	..	..	23	..	1	1	11	3	2	..	..	..	..	..	18
New Liskeard	..	..	2	9	8	4	5	2	1	..	..	31	..	1	4	3	6	2	3	..	..	..	..	19
Niagara Falls	..	2	6	5	1	1	..	..	..	..	..	15	..	1	2	8	15	4	..	..	..	..	..	30
Oakville	..	2	10	14	12	7	4	5	3	..	..	57	..	..	6	7	6	3	1	..	..	..	..	23
Port Perry	..	..	...	...	...	...	..	..	..	..	..	...	..	..	...	...	...	...	..	..	..	..	..	...
Renfrew	1	8	20	35	35	25	17	15	6	1	..	163	..	..	10	13	20	21	16	5	3	1	..	89
Ridgeway	..	3	4	10	10	3	1	..	..	..	..	31	..	..	7	7	8	4	1	..	..	..	..	27
St. Thomas	..	2	19	27	27	11	..	..	..	..	..	86	..	..	20	33	29	21	3	1	..	..	..	107
Swansea	..	..	1	2	5	1	1	..	..	..	..	10	..	2	5	1	2	...	..	..	..	..	..	10
Todmorden	..	1	1	1	...	1	..	..	..	..	..	4	..	..	...	1	...	...	..	..	..	..	..	1
Winchester	..	2	6	14	11	6	7	1	1	..	..	48	..	1	3	4	5	3	..	4	1	1	..	22
Total	1	33	108	242	231	120	76	46	14	4	0*	875	3	13	101	183	185	113	45	16	5	4	0	668

Appendix B.—Summary of replies to questionnaires received from Secondary School Students of Agriculture, 1922.

APPENDIX B.

High School Standing.														Preparing for									
Form I.		Form II.		Form III.		Live on farm; raised on farm.		Live on farm; raised in town.		Live in town; raised on farm.		Live in town; raised in town.		Teaching.		Farming.		Agricultural College.		University.		Other Occupation.	
Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys
41	35	2	....	...	...	1	12	...	2	4	...	27	22	9	3	...	1	...	...	1	8	33	18
19	10	13	5	2	...	20	8	...	...	2	2	12	5	19	3	...	...	...	1	11	4	5	2
40	45	16	4	20	11	35	25	8	13	7	3	26	20	43	8	1	7	...	3	5	30	27	13
2	43	...	....	...	...	....	7	...	1	...	3	2	32	....	2	...	5	...	5	...	15	....	17
21	...	15	2	2	...	18	1	...	...	3	1	17	....	....	...	...	...	...	...	1	1	9	1
46	34	20	9	1	...	30	15	...	1	8	1	30	26	25	3	...	2	...	...	7	6	29	29
8	22	...	17	...	...	....	16	...	2	1	5	7	16	3	13	...	5	...	...	...	8	3	2
..	21	1	9	...	1	....	8	...	1	...	3	1	19	....	7	...	3	...	3	...	8	1	10
9	9	10	12	9	4	18	16	1	1	1	4	9	4	18	3	...	2	...	...	1	2	5	12
..	...	23	5	6	4	13	7	2	...	2	1	11	1	10	1	...	...	...	...	2	3	15	5
29	2	...	....	...	...	....	....	...	...	...	1	29	1	12	...	...	...	...	...	2	2	15	....
38	18	...	....	...	...	18	3	...	2	2	...	18	13	12	1	...	...	...	...	2	4	23	13
6	7	...	....	...	...	5	6	...	1	...	...	1	....	2	1	...	2	...	1	1	....	3	3
23	16	...	1	...	...	10	5	1	...	4	1	9	12	12	1	...	1	...	...	1	1	9	15
10	11	6	5	13	3	4	...	...	...	2	2	25	17	13	...	...	...	...	...	6	13	11	4
14	20	1	11	...	...	2	4	...	...	...	3	12	25	8	1	...	1	...	...	...	13	7	15
33	16	15	7	9	...	30	6	3	5	3	1	21	10	36	5	12	3	...	3	5	2	7	5
..	...	...	....	...	...	....	....	...	...	...	...	....	....	9	...	...	4	...	...	...	....	....	....
100	50	39	28	25	12	55	16	1	1	8	...	98	67	127	8	...	3	...	2	16	32	20	35
22	23	9	5	...	...	17	11	1	2	...	...	13	15	12	2	...	3	...	1	1	9	16	12
34	35	54	75	...	...	13	12	3	2	7	6	66	91	38	6	...	2	...	2	13	47	36	45
10	10	...	....	...	...	....	....	...	...	...	1	10	9	3	...	...	...	...	...	1	3	6	6
4	1	...	....	...	...	....	....	...	...	...	...	4	1	....	...	...	...	...	...	...	....	4	1
15	8	22	8	11	4	26	11	1	...	6	5	15	6	30	...	...	3	...	1	1	6	15	11
524	437	246	203	87	33	325	189	21	34	61	43	463	412	441	68	13	47	...	22	77	217	298	275

Appendix B.—Summary of replies to questionnaires received from Secondary School Students of Agriculture, 1922.

APPENDIX C.

	Age last birthday														Age on leaving school									
	13	14	15	16	17	18	19	20	21	22	23	24	25	11	12	13	14	15	16	17	18	19	20
Barrie	..	2	1	2	3	1	1	..	2	..	..	..	..	..	1	..	6	2	..	..	..	..	..
Binbrook	..	4	1	14	3	4	5	6	1	3	..	2	1	..	..	6	17	9	1	2	1	..	1
*Bolton	1	1	7	4	6	5	7	1	2	2	6	1	3	..	..	..	..	..	..	..	..	..	..
Clinton	..	1	1	5	4	2	4	3	1	..	..	..	..	1	2	5	6	3	2	1	1	..	..
Norwood	..	1	2	2	4	1	2	2	2	1	..	1	..	..	1	2	9	5	2	..	..	..	1
*Strathroy	..	..	1	2	..	1	4	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*Waterdown	..	..	2	..	1	2	2	1	2	1	..	..	1	..	..	..	..	..	..	..	..	..	..
Wellington	..	..	..	3	1	1	..	2	..	..	..	..	..	..	..	1	1	2	2	..	..	..	..
*Wingham	..	..	2	2	4	3	4	3	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..
Total	1	9	17	34	26	20	29	20	11	8	6	5	5	1	4	14	39	21	7	3	2	..	2

	**School standing.											Prospective career.			Distance from home to school. (Fraction counted as whole mile).													
	Public School, Form Sr. 2.	Public School, Form Jr. 3.	Public School, Form Sr. 3.	Public School, Form Jr. 4.	Public School, Form Sr. 4.	High School Entrance Standing.	High School, Form I.	High School, Form II.	High School, Form III.	High School, Form IV.	Junior Matriculation Standing.	Farming.	Not Farming.	Doubtful.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Barrie	..	..	..	3	4	3	2	..	..	..	..	12	..	..	..	..	2	..	2	1	..	1	..	2	2	..	..	..	..
Binbrook	..	..	..	4	13	15	8	5	..	..	..	34	1	10	7	1	5	10	4	4	9	2	1	..	2	..	1	..	..
*Bolton	..	..	2	3	15	16	2	4	..	..	1	45	1	..	1	4	7	6	7	9	3	1	3	5	..	1	..	..	..
Clinton	2	..	..	..	6	9	2	1	..	..	1	13	2	6	..	2	3	..	4	2	3	2	..	2	..	2	..	1	..
Norwood	1	..	2	1	6	5	3	1	1	1	..	20	1	1	4	1	1	2	4	2	1	2	..	1	..	1	..	..	1
*Strathroy	..	..	..	..	1	5	1	..	..	..	1	9	..	1	1	1	..	..	1	..	2	..	3	..	..	..	1	..	1
*Waterdown	..	..	..	..	2	3	6	..	..	..	1	9	2	2	2	2	2	2	1	..	2	1	..	..	..	..	..	1	..
Wellington	..	..	1	..	..	3	1	1	..	..	1	5	1	..	3	..	2	..	..	1	..	..	..	..	..	..	..	..	..
*Wingham	..	..	..	..	1	7	2	3	..	..	..	20	1	..	1	3	4	3	2	2	3	..	..	..	..	..	..	..	1
Total	3	..	5	11	48	66	27	15	1	1	5	167	9	20	19	14	26	23	25	21	23	9	7	10	4	4	2	2	3

Appendix C.—Summary of replies to questionnaires from boys in winter schools of Agriculture. 1921-1923.
*1921-1922.
**12 public school pupils not placed.

APPENDIX C.

	Live on farm; raised on farm.	Live on farm; raised in town.	Live in town; raised on farm.	Live in town; raised in town.	Keep cost accounts. Field crops.		Animal products.		Milk records		Feed records.		Home each night?		Automobile at home.		Means of travel to and from school. Walk.	Drive a horse.	Drive an automobile.	Ride on train.	Ride on radial car.	Ride on bus.
					Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No						
Barrie	12	...	...	...	2	10	5	7	...	12	1	11	5	7	8	4	5	4	..	2	..	..
Binbrook	44	1	1	...	2	44	3	43	4	42	2	43	41	4	36	9	6	36	1	..	..	..
*Bolton	42	4	1	...	...	...	...	...	...	...	...	...	47	...	...	...	3	30	2	12	..	..
Clinton	17	1	...	2	...	21	1	20	...	21	1	20	14	7	11	9	1	14	..	6	..	..
Norwood	19	...	...	2	...	21	2	20	2	19	...	21	16	5	12	9	4	16	..	..	..	..
*Strathroy	11	...	...	...	...	...	...	...	...	...	...	...	8	3	...	...	2	3	2	..	..	..
*Waterdown	10	1	...	2	...	...	...	...	...	...	...	...	12	1	...	...	6	..	2	5	..	..
Wellington	6	...	...	1	1	5	2	4	2	4	...	6	7	...	5	1	3	3	..	..	..	1
*Wingham	20	1	...	...	...	...	...	...	...	...	...	...	15	6	...	...	7	9	..	3	..	..
Total	181	8	2	7	5	101	13	94	8	98	4	101	165	33	72	32	37	115	7	28	..	1

Appendix C.—Summary of replies to questionnaires from boys in winter schools of Agriculture. 1921-1923.

*1921-1922.

**12 public school pupils not placed.

APPENDIX D

	Age last birthday.															Age on leaving school.								
	13	14	15	16	17	18	19	20	21	22	23	24	25	11	12	13	14	15	16	17	18	19	20
Barrie	1	1	..	3	2	2	..	..	2	..	..	..	..	..	..	1	4	2	3	1	..	..	..
Binbrook	..	1	4	3	5	4	6	3	3	4	2	..	..	..	1	9	17	9	2	..	1	..	..
*Bolton	..	..	6	5	4	2	3	..	3	6	..	5	..	..	..	..	..	..	..	..	..	..	..
Clinton	..	..	1	2	1	4	4	1	3	2	..	1	..	..	1	4	5	5	1	1	..	2	..
Norwood	..	1	1	1	1	3	2	..	2	..	..	..	..	..	..	2	3	1	..	2	3	..	..
Parkhill	..	..	3	2	..	..	1	1	2	1	..	..	4	..	1	1	6	2	3	..	..	..	1
*Strathroy	..	..	1	4	6	3	1	1	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..
*Waterdown	..	..	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wellington	..	..	..	..	2	4	5	..	1	..	1	1	..	..	3	4	2	..	3	..	..	1	..
*Wingham	..	..	..	1	2	..	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	1	3	17	23	23	23	24	7	17	14	3	9	4	..	6	21	37	19	12	4	4	3	1

	School Standing.											Distance from home to school. (Fraction counted as whole mile).														
	Public School, Form Sr. 2.	Public School, Form Jr. 3.	Public School, Form Sr. 3.	Public School, Form Jr. 4.	Public School, Form Sr. 4.	High School Entrance Standing.	High School, Form I.	High School, Form II.	High School, Form III.	High School, Form IV.	Jr. Matriculation Standing.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Barrie	..	..	..	..	4	4	..	3	..	..	..	2	..	..	2	1	1	..	1	1	1	..	..	..	..	1
Binbrook	..	..	..	..	3	24	7	3	..	..	..	4	6	3	4	3	4	7	4	1	..	1	2	..	..	..
*Bolton	..	..	1	..	9	17	3	3	..	..	2	4	2	7	1	8	5	2	1	..	3	..	3	..	..	..
Clinton	..	..	..	..	5	8	3	1	1	..	..	1	..	2	2	2	5	1	3	..	1	..	..	..	..	..
Norwood	..	..	..	..	1	6	1	1	..	1	..	5	1	1	..	1	1	..	1	..	1	..	..	..	..	..
Parkhill	..	..	..	1	4	6	..	1	1	..	..	3	1	3	2	..	2	2	..	..	..	..	1	..	..	..
*Strathroy	..	..	..	1	2	8	2	4	..	..	..	3	1	4	2	2	2	1	..	1	1	..	..	..	..	..
*Waterdown	..	..	..	..	..	3	1	3	..	..	..	4	1	..	..	2	..	2	1	..	..	..	..	..	..	..
Wellington	..	..	..	..	2	8	1	1	..	1	..	4	2	2	..	1	1	2	..	..	1	..	..	..	..	..
*Wingham	..	..	..	..	..	4	4	3	..	..	..	..	1	..	..	2	..	2	..	..	1	1	..	..	..	..
Total	..	..	1	2	30	88	22	23	2	2	2	30	15	22	13	22	21	19	11	3	9	2	6	..	..	1

Appendix D.—Summary of replies to questionnaires, from girls in winter schools of Household Science, 1921-1923.
*1921-1922.

APPENDIX D

	Live on farm; raised on farm.	Live on farm; raised in town.	Live in town; raised on farm.	Live in town; raised in town.	Live in county in which school is held.		Home each night.		Automobile at home.		Means of travel to and from school				
					Yes	No	Yes	No	Yes	No	Walk.	Drive a horse.	Drive an automobile.	Ride on train.	Ride on bus.
Barrie	8	1	...	2	...	...	3	8	3	8	4	3	...	2	...
Binbrook	33	..	3	1	...	...	25	14	27	11	5	10	...	...	...
*Bolton	32	..	2	2	...	...	26	10	...	...	10	18	1	6	...
Clinton	34	...	1	3	...	...	5	14	12	6	1	10	...	4	...
Norwood	6	...	2	3	...	...	9	2	6	5	1	...	...	...	...
Parkhill	13	...	1	...	...	...	10	4	5	9	2	...	...	...	...
*Strathroy	16	...	2	1	...	...	15	4	...	...	6	8	3	...	...
*Waterdown	7	...	2	1	...	...	9	1	...	...	5	...	1	5	...
Wellington	2	...	1	2	...	...	9	4	9	4	...	5	...	...	...
*Wingham	7	...	...	...	...	...	2	5	...	...	...	7	...	...	...
Total	158	1	14	15	...	...	113	66	62	43	34	61	5	17	...

Appendix D.—Summary of replies to questionnaires, from girls in winter schools of Household Science; 1921-1923.
*1921-1922.

APPENDIX E

	Farming	At Normal School	At Agricultural College	At University	In other occupations	Total
Almont	9	....	....	....	8	17
Athens	3	....	....	....	....	3
Beamsville	5	4	1	1	11	22
Belleville	....	....	....	....	....	0
Brockville	2	4	....	....	2	8
Bowmanville	6	....	....	....	4	10
Clinton	....	....	....	....	....	0
Cobourg	2	....	....	....	8	10
Drayton	11	7	....	....	16	34
Essex	....	....	....	....	....	0
Haileybury	....	....	....	....	....	0
Kincardine	....	....	....	....	....	0
Mallorytown	3	....	....	....	1	4
Mitchell	....	....	....	....	....	0
New Liskeard	....	....	....	....	....	0
Niagara Falls	2	....	....	....	5	7
Oakville	1	5	1	....	2	9
Port Perry	1	....	....	....	....	1
Renfrew	14	24	....	....	7	45
Ridgeway	3	4	....	2	5	14
St. Thomas	....	....	....	....	....	0
Swansea	....	....	....	....	....	0
Todmorden	....	....	....	....	....	0
Winchester	6	6	....	3	13	28
Total	68	54	2	6	82	212

Appendix E. Occupations of students of agriculture who left secondary schools of Ontario in 1922. Data from questionnaire.

APPENDIX F.

Questionnaire addressed to School Principals regarding the distances to the nearest Secondary Schools of various types in Ontario.

Nearest	Place	Distance
Fifth Class.		
Continuation School.		
High School.		
Collegiate Institute.		

Name of Principal..... Address .....

APPENDIX G

MINIMUM QUALIFICATIONS OF PROSPECTIVE INSTRUCTORS

For County or Separate Agricultural Schools and High School Agricultural Departments

1 Specifications		2 Farm Work Instructor	3 Related Study or Technical Instructor	4 Farm Work and Related Study Instructor	5 Non-agricultural Instructor
(1) Age:	A. Without successful teaching experience.	21	21	21	No such applicant considered.
	B. With successful teaching experience.	21	21	21	21
(2) Farm Experience		Eight calendar years under farming conditions like those in Massachusetts.	Two calendar years, and vacations during agricultural school or college course.	Eight calendar years in farming if only special agricultural courses have been taken; 4 calendar years in farming if 2 years or equivalent in agricultural courses have been taken.	Knowledge enough of farming to enable the instructor to understand the aim of vocational agricultural education, and a natural inclination toward the betterment of country living.
(3) Academic Education		Grammar graduate.	High school or agricultural school graduate	High school or agricultural school graduate.	College or normal school graduate.
(4) Technical Education		Special courses in agriculture.	Two years or equivalent in agricultural courses.	Two years or equivalent in agricultural courses.	Courses in subjects to be taught.
(5) Professional Education		Approved study of home-project methods of teaching agriculture.	Courses in home-project methods of teaching agriculture and related studies.	Approved study of home-project methods of teaching agriculture and related studies.	Course in pedagogy, and one year of successful teaching experience.
(6) Personality	Satisfactory and with presumption of ability to handle pupils (Personal interview required).				
(7) Physique		Good health (attested by physician's certificate) and no deformity.	Good Health (attested by physician's certificate).	Good Health (attested by physician's certificate) and no deformity.	Good health (attested by physician's certificate).
(8) Sex		Men only.	Men only.	Men only.	Men only.

Fig. 5.—Diagram of Minimum Qualifications of Candidates for Agricultural School and Department Instructorships

(From Massachusetts Bulletin of the Board of Education, 1916, No. 23.)

APPENDIX H.

Federal grants to the provinces of Canada, in aid of agricultural and technical education.

Agricultural Instruction Act	Grants	Technical Education Act
1913	$ 700,000	1920
1914	800,000	1921
1915	900,000	1922
1916	1,000,000	1923
1917 to 1922	1,100,000 annually	1924 to 1929

APPENDIX I.

Federal grants under the Smith-Hughes Act to the States of the Union.

	Agricultural Education	Trade, Home Economics and Industrial Education	Teacher-Training
1918	$ 500,000	$ 500,000	$ 500,000
1919	750,000	750,000	700,000
1920	1,000,000	1,000,000	900,000
1921	1,250,000	1,250,000	1,000,000
1922	1,500,000	1,500,000	1,000,000
1923	1,750,000	1,750,000	1,000,000
1924	2,000,000	2,000,000	1,000,000
1925	2,500,000	2,500,000	1,000,000
1926	3,000,000	3,000,000	1,000,000
Thereafter	3,000,000	3,000,000	1,000,000

APPENDIX J.

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